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BRITISH MEDICAL JOURNAL

JOURNAL OF THE BRITISH MEDICAL ASSOCIATION

SATURDAY JULY 19 1947

TABLE OF CONTENTS

Aspects of Human Infertility ALBERT SHARMAN, M.D., M.R.C.O.G. 83

Lymph-gland Biopsies for Bone and Joint Tuberculosis
G. P. ARDEN, M.B., F.R.C.S., and J. C. SCOTT, M.D., M.S., F.R.C.S. 87

Treatment of Inevitable, Incomplete, and Septic Abortion
J. McD. CORSTON, M.B., and JOHN STALLWORTHY, F.R.C.S. 89

A Tuberculosis Contact Clinic for Children F. J. W. MILLER, M.D., M.R.C.P. 91

Rhabdomyosarcoma Causing Acute Retention ELLISON MINCHIN, F.R.C.S. 94

MEDICAL MEMORANDA

Pure Anti-E Agglutinin in the Serum of an Rh-negative Woman. DAVID S. DICK, M.B., Ch.B. 95

GENERAL ARTICLES AND NEWS

Tuberculosis and the Health Act 103
ROTUNDA BICENTENARY INTERNATIONAL CONGRESS 106
UNIVERSITIES AND COLLEGES 115
MEDICAL NOTES IN PARLIAMENT 116
MEDICAL NEWS 118

REVIEWS

Electrocardiography 96
Pneumococcus Types 96
Textbook of Embryology 96
Torulosis 97
Books Received 97

REPORTS OF SOCIETIES

FACULTY OF RADIOLOGISTS: Bronchiectasis in Children 107

OBITUARY

J. T. MacCurdy, M.A., M.D., SC.D. 113
F. E. FOX, M.R.C.S. 113
A. E. Maylard, M.B. 114
W. T. F. Davies, C.M.G., D.S.O., M.D. 114
H. H. Mills, M.D. 114
F. M. B. Dougherty, M.B. 114

Epidemiology Section 117

LEADING ARTICLES

Next Week's A.R.M. 98
Chromatography Applied to Medicine 99

ANNOTATIONS

DFP in Glaucoma 100
Operation for Congenital Pulmonary Stenosis 100
High-voltage *X* Rays 101
Acquired Resistance to Penicillin 101
Blindness in Scotland 102
Human Nutrition Laboratory at Oxford 102
Half-yearly Indexes 102

QUESTIONS AND COMMENTS

Poliomyelitis and Water—Vaccination against Smallpox—Lisping—Orchitis after Mumps—Oxygen Inhalation—"Dyspeptic" Ulcers—Diphtheria and Vitamin B—Dehydrocholic Acid—Metal-fume Fever—Fissured Lip—Scabies Infection of Anus 119–20

SUPPLEMENT

Medical Organization in Denmark. E. JUEL HENNINGSEN, M.D. *13*
Annual Representative Meeting, 1947 *15*
GENERAL PRACTITIONER OBSTETRICIANS *16*
PETROL RATIONING PERIODS *16*
HEARD AT HEADQUARTERS *17*
H.M. FORCES APPOINTMENTS *17*
ASSOCIATION NOTICES *18*

CORRESPONDENCE

Medicine in the United States. N. K. CONNOLLY, M.D. 108
World Medical Association. DORIS M. ODLUM, M.R.C.S. 108
Symmetrical Gangrene in the African. J. G. SALTER, M.B. 108
Peptic Ulcers and Radiology. R. L. MANSI, M.R.C.S. 109
The Thalamic Syndrome. B. H. KIRMAN, M.D. 109
Vaccination against Variola. G. FRIEDLAENDER, M.D. 109
Physical Therapy of Mental Disorder. HARVEY BAIRD, M.D. 110
Sulphone Treatment of Leprosy. R. G. COCHRANE, M.D. 110
Gastrectomy and Gall-bladder Disease. BRYAN WILLIAMS, M.D. 111
Bornholm Disease A. McE. TURNBULL, M.B. 111
Training a Psychiatrist. R. M. AYTON-ORMSTON, L.R.C.P.Ed. 111
Occupational Disease in Review. F. K. FORRESTER 112
Remuneration in the N.H.S. S. J. HADFIELD, M.B. 112
Filling in the Health Act. E. SAKOSCHANSKY, M.R.C.S. 112
International System of Weights and Measures. J. M. HAMILL, M.D. 112
Points from Letters 113

MEDICO-LEGAL

Recommendation as a Medicine 114

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BRITISH MEDICAL JOURNAL

LONDON SATURDAY JULY 19 1947

SOME ASPECTS OF HUMAN INFERTILITY*

BY

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Although infertility is one of the oldest of human problems it is only within the present century that real progress has been made in its study. But in these comparatively few years intensive work has been done on this subject, and the accumulated literature is now enormous. It is not my intention to refer to more than the essential relevant writings or to give an exhaustive account of the complete investigation and treatment of a barren marriage. It is proposed, rather, as indicated in the title of the paper, to discuss certain selected aspects of the subject which have been under personal study and investigation during recent years—namely: (1) The tubal status—patency and non-patency—as determined by insufflation in a consecutive and unselected series of 1,478 cases of primary sterility. (2) Therapeutic aspects of insufflation, based on 271 cases of pregnancy following insufflation in primary sterility. (3) Tuberculous endometritis and primary sterility—a study of 100 cases (the largest series ever recorded). (4) The causation of tubal occlusion.

The Tubal Status

Patency of the lumen of the Fallopian tube is an obvious essential to conception. But the tube is not a static entity: not only does its muscular coat undergo peristaltic movements but its fibres increase and decrease in length with the phases of the cycle. Guthmann (1922) was the first to record the fact that tubal peristalsis was responsible for the manometric fluctuations on insufflation, and he based his conclusions on the fact that when the tubes were closed these fluctuations were absent. Müller (1944) has shown by hysterosalpingograms that peristalsis occurs in the tubes, both in the direction of the uterus and from the uterine end towards the fimbriae. In two cases of sactosalpinx he demonstrated that iodine masses moved from place to place as the result of peristalsis and antiperistalsis. Peristalsis has been observed by Westman (1930) in the monkey and by Mikulicz-Radecki and Nahmmacher (1926) and by Siegler (1944) in the rabbit. Peristaltic movements or contractions in the human tube had never been directly visualized until August, 1946, when I observed them during the course of an operation for the removal of a diseased ovary. I had been utilizing the opportunity for studying the effects of insufflation (per vaginam) on the tubes when their fimbriated ends were clamped. As soon as the pressure forceps were released peristaltic movements in the direction of the fimbriated ends were clearly seen and demonstrated to the assistant, house-surgeon, and anaesthetist. These movements were seen in only one of nine such experiments. As Ruddick (quoted by Siegler, 1944) has failed to notice any tubal peristalsis on peritoneoscopy in over 2,000 cases, it is probable that the non-physiological conditions imposed by experiment were responsible for inducing peristalsis in my case.

Since the functional condition of the tube to a large extent determines the chances of fertilization it is obviously desirable to investigate this aspect of the reproductive mechanism. Although the available methods are not physiological they have the advantage of being easy to apply and of yielding sufficiently accurate information for clinical purposes. They should be adopted as part of the routine examination of the wife, for impairment of tubal function cannot be excluded by the ordinary bimanual examination, however carefully conducted.

The methods in general use fall into two main groups—those designed to investigate the passage of a gas through the genital tract (utero-tube insufflation) and those in which the condition of the tubes is revealed by their radiographic appearances after the injection of a suitable opaque substance (hysterosalpingography). It is proposed here to discuss only insufflation, for which purpose various types of apparatus have been described since the introduction of the method by Rubin in 1919. The outstanding advance in recent years has been the inclusion of the kymograph, which makes possible the registration of tubal contractions and thus takes into consideration the actual behaviour of the tubes during the test. Four types of record are obtained, corresponding to the following conditions: normal tubal patency, tubal spasm, tubal stenosis, and non-patency.

The total number of patients in the series whose tubes were insufflated amounted to 1,478, of whom about 400 had two or more insufflations. In most instances the test was repeated simply as a confirmatory procedure; in some it was done to compare the findings with and without anaesthesia; but in 22 patients six or more tests were done to study the behaviour of patent tubes over a considerable period of time. One patient was insufflated 23 times over a period of seven months and another daily for the 18 days between the conclusion of one period and the beginning of another.

A study of the behaviour of patent tubes as revealed by repeated insufflations shows that under similar conditions—for example, the consistency of the rate of flow of the gas—there is a noteworthy constancy in the appearance of the tracings obtained. No great difference, either in the level at which patency is established or in the appearance of the tubal contraction waves, is usually seen in any given patient when insufflation is repeated even after several months. Increase in the rate of flow of gas is sometimes followed by a great increase in the patency-pressure level and by more active deeper peristaltic waves, but this is not invariable. Around ovulation time (presumptive) more active or more frequent peristalsis may occur. This also

*Being the substance of a paper read, by invitation, at the South African Medical Congress, Durban, October, 1946.

is variable, and there is no indication of any constant close correspondence between the type of tracing obtained and the stage of the endometrial cycle. On the other hand, repeated insufflations have shed some interesting light on the criteria of non-patency. The first point is that a single finding of non-patency is not reliable. This has been proved by the subsequent occurrence of a characteristic kymographic tracing of patency (corroborated by the presence of shoulder pain or by the demonstration of pneumoperitoneum), or by hysterosalpingography, or by the occurrence of pregnancy. In a consecutive series of 57 patients in whom the tubes were not permeable to gas on insufflation under anaesthesia, repetition of the test a few days later, without anaesthesia, showed normal patency in 39 (68.4%). This would indicate that only 31.6% of these cases showing non-patency on a single test actually have occluded tubes.

Insufflation has revealed apparent non-patency in 387 (26.2%) of the 1,478 cases. In the earlier cases the diagnosis was often made on a single test. The possible fallacy of this and its extent, when a finding of non-patency is obtained, has just been referred to: the incidence of non-patency was then 38% (480 cases). Within recent times a much more strict minimal criterion has been established —namely, two negative insufflations and a negative hysterosalpingogram—the last 998 cases show an incidence of non-patency of 20.5%. This is believed to represent very closely the real figure.

A negative insufflation is generally taken to mean that gas fails to pass at 200 mm. Hg (the usual upper limit). In the course of numerous experimental tests, using 250 mm. Hg as the upper limit, I have often found that gas has passed between these limits. We have not encountered any ill effects or sequelae since adopting as a routine the pressure of 250 mm. Hg as the upper limit. Moreover, insufflation experiments using high pressures have been conducted in the course of abdominal operations for tubal sterilization or salpingostomy. In two cases of tubal blockage (tuberculous) a sustained pressure of 250 mm. Hg was observed to make no apparent impression on the tubes, and in another similar case the finding was the same with a pressure of 320 mm. Hg. (In nine other cases in which the tubes had been artificially blocked at their fimbriated ends by clamps the results were inconstant; in some cases ballooning of the tubes occurred at pressures below 100 mm. Hg.) It is suggested that greater accuracy of results (and possibly therapeutic success) would be obtained if the routine upper limit of pressure of 200 mm. Hg were raised to 250 mm. Hg.

The investigation of the tubal status of young unmarried women affords an interesting comparison. Altogether 236 consecutive unselected subjects (aged from 13 to 39 years) were insufflated at the time of operation for a gynaecological complaint and in all but four the tubes were permeable to gas at the first test. Three of the four had insufflation repeated at a later date without anaesthesia and the tubes were then found to be permeable to gas. The fourth patient could not be traced.

Therapeutic Aspects of Insufflation

Of the 902 patients traced—primary sterility only—271 (30%) became pregnant. The main features may be summarized as follows: (1) 164 were under 30 years of age and 107 were 30 years or older when coming first under observation. (2) The oldest was 42 years (married four years)—she miscarried at two months. (3) 136 had been married three years or more, 47 five years or more, and one 13 years (aged 35). No patient who had been married for a longer period than this became pregnant. (4) Tubal insufflation had been performed in 262 cases; patency had been diagnosed in 231 and non-patency in 31 (all the latter cases were early ones in the series, insufflated once only)—24 under anaesthesia and seven without it. The fallacy of a single finding of non-patency is apparent from these figures. (5) Pregnancy terminated in miscarriage in 50 (18.5%) of the 271, but seven subsequently had a full-time child; one further case had pregnancy terminated (in another hospital) for hyperemesis gravidarum, and another two for toxaemia (one at four months and the other at seven months); one patient had a tubal pregnancy four years after insufflation. Thus 224 (83%) bore a child (two cases had twins); one patient had three miscarriages and five patients had two—none has since gone to term. (6) The sex incidence of the infants was 49% male and 51% female. (7) *Time elapsing between insufflation and conception* (259 cases: in three of the 262 cases insufflated the date of occurrence of pregnancy could not be accurately ascertained).—Twenty-three pregnancies occurred within one month after insufflation, 22 within two months, 24 within three months, seven within four months, 17 within five months; and 15 within six months: a total of 108. Thus, 69 (27%) of 259 pregnancies occurred within three months of insufflation and 108 (42%) within six months. During the following six months 47 became pregnant.

Rubin (1945) reported a personal series of 573 cases of primary and secondary sterility that became pregnant after insufflation. Within three months of the test 265 (46.2%) became gravid, and within six months 378 (64%). Of 250 patients who were personally delivered 81.8% had full-term children. (This corresponds closely to my figure of 83% in 224 cases, already mentioned.)

Tuberculous Endometritis and Sterility

The examination of endometrium in a consecutive series of 1,898 cases of primary sterility has shown unsuspected tuberculosis in 100 (5.3%). In the first instance this finding was largely an accidental discovery in endometrium removed primarily with a view to the diagnosis of anovulation. The histological characters of the lesion and the proofs of its tuberculous nature have been fully described elsewhere. Space does not permit the discussing of these or the detailing of the biopsies and findings in each of the 100 cases, but the following essential points may be dealt with in more detail: (*a*) the high incidence of endometrial tuberculosis in sterility; (*b*) the evidence that this estimated incidence is minimal; (*c*) the duration of the disease; (*d*) the effect of curettage—the rate of recurrence; (*e*) the results of search for tuberculous history and for other tuberculous lesions; (*f*) the effect of bilateral salpingectomy; (*g*) the hopeless fertility prognosis; (*h*) the relationship of endometrial tuberculosis to tubal occlusion.

(*a*) *The High Incidence of Endometrial Tuberculosis in Sterility.*—Sutherland (1943) has reported the finding of tuberculosis in 100 endometria in a consecutive series of 7,670 cases (*including* sterility cases), giving an incidence of 1.3%. It has already been pointed out that in my series of 1,898 endometria the tuberculosis incidence was 5.3%. Further analysis shows that endometrial tuberculosis is 15 times more common in sterile than in fertile women.

(*b*) *Evidence that this Incidence is Minimal.*—In 58 of these patients biopsy was performed more than once: when performed twice it was tubercle-positive on both occasions in 7 patients, and once positive and once negative in 12 cases; when performed either three or four times in the remaining patients, on 40 occasions it was tubercle-positive and on 26 tubercle-negative. Obviously, therefore, in many instances no evidence of the disease was found on single occasions. This occasional absence of evidence prompted further study of the endometria concerned. The paraffin blocks were re-imbedded

and reorientated so that further sections might be taken from the other end of the biopsy material. This was done in 12 blocks from six patients. Numerous sections were examined, but there was no evidence of tuberculosis in any of them, although many showed histological evidence of chronic endometritis. Further light in this connexion was shown by the examination of additional sections of the definitely positive biopsies: in several of the cases sections showed no evidence of tubercle follicles, although, in some, plasma and round-cell infiltration was marked. Moreover, in several cases in which biopsy material was divided negative histological findings and positive guinea-pig inoculation results were obtained. It may be concluded, therefore, that absence of signs of tuberculous endometritis in any given biopsy is not evidence that the disease is not present, and that the incidence figure of 5.3% in my series is an absolutely minimal one. Moreover, in any case of primary sterility showing histological evidence of chronic endometritis further sections should be examined for evidence of tuberculous lesions, and if such evidence is not found additional biopsy should be performed. *Chronic endometritis in a case of primary sterility should be regarded as suggestive of tuberculous infection.*

(c) *Duration of the Disease.*—Endometrial tuberculosis was found to be still in evidence after the following lengthy periods of time in seven patients: 13, 7½, 7, 7, 6, 6, and 5 years.

(d) *Effect of Curettage.*—Although it was considered most improbable that even very thorough curettage of a tuberculous endometrium would "cure" the condition, studies were carried out to observe the recurrence of the tubercle follicle and to determine its time interval. Four sterile patients were investigated. The findings may be summarized: tuberculous endometritis was found to have recurred at the following intervals of time after thorough curettage under anaesthesia: 34 days, 20 days, 3 months, and 27 days. There seems little doubt, therefore, that reinfection of the endometrium rapidly recurs after curettage. The question naturally arises as to the location of the focus from which reinfection occurs. Two lines of investigation were pursued: (1) careful inquiry was made into the previous history of the patient, and a detailed search for tuberculous lesions in other organs of the body was carried out, and (2) the effects of bilateral salpingectomy were studied.

(e) *Results of Search for Tuberculous History and for other Tuberculous Lesions.*—In none of these cases was pelvic tuberculosis diagnosed or suspected when endometrial biopsy was performed. Almost all were noted as enjoying good health, and, with the exception of seven cases, there was no history suggestive of tuberculosis in childhood or adolescence: the seven exceptions were: (1) aged 28, "pleurisy and gastro-enteritis" at age of 17; (2) aged 29, "tuberculous gland of neck" at 5 years; (3) aged 24, "tabes mesenterica" at 14 (nine months in sanatorium); (4) tuberculous gland removed with appendix at age of 17; (5) aged 23, "tuberculous peritonitis" at 14 (2½ years in sanatorium); (6) aged 26, "in sanatorium for ten months at age of 16—menstrual trouble"; and (7) aged 26 (laparotomy two years earlier in another hospital revealed abdominal tuberculosis). Radiographs of the chest were carried out in 51 of the 100 cases; all but eight were negative. Three of the latter showed active apical tuberculosis of both lungs, and the others had calcified plaques or old healed apical lesions. A large number of abdomino-pelvic radiographs were done, until it was seen that many cases of confirmed tubal tuberculosis showed no calcified glands, whereas many control cases (not sterility ones) did.

(f) *Effect of Bilateral Salpingectomy.*—In August, 1942, a patient complaining of dyspareunia and sterility was curetted under anaesthesia and insufflated. Gas failed to pass at 200 mm. Hg; the endometrium showed unmistakable tuberculous foci. Two years previously she had had a pelvic operation in another hospital. Inquiry there elicited the information that the operation had been "bilateral salpingectomy"; histological examination confirmed the diagnosis of tuberculous salpingitis. As the finding of tuberculous endometritis after salpingectomy was diametrically opposed to that of Solomons (1935)—namely, "removal of tubercular Fallopian tubes means a cure of tuberculous endometritis"—it was felt that further investigation of the matter was essential. In three patients, complaining of primary sterility only, in which there was tuberculous endometritis but no palpable adnexal swellings, bilateral salpingectomy was performed. The following are the details:

Case 1.—Mrs. R., aged 23. On Jan. 7, 1944, curettage and bilateral salpingectomy were carried out; the fundus uteri and interstitial portions of the tubes were not excised. Biopsies were subsequently performed 12 and 14 weeks later. On both occasions tuberculosis of the endometrium was present. This finding confirmed that of the previous case—that removal of the Fallopian tubes did not cure endometrial tuberculosis—but it did not exclude the possibility that reinfection of the endometrium might occur from the intact interstitial portions. It was therefore decided to do a complete bilateral salpingectomy, including the fundus uteri, when opportunity offered. The following two cases were so treated.

Case 2.—Mrs. F., aged 39, had a complete bilateral salpingectomy and fundectomy performed on Aug. 7, 1944. Curettage three weeks later and biopsies two, three, and four months later all showed tuberculosis of the endometrium. Biopsy was again performed on Aug. 21, 1946—that is, two years after operation—and tuberculous endometritis was present.

Case 3.—Mrs. L., aged 26, had a complete bilateral salpingectomy and fundectomy on Aug. 18, 1944. A biopsy performed two years later showed no evidence of tuberculous infection. This was not very surprising in view of the fact that the endometrium removed on five occasions in this patient prior to salpingectomy had shown tubercle follicles on three occasions but none on two.

These findings prove that, despite widely accepted statements to the contrary in the literature, removal of tuberculous Fallopian tubes does *not* cure endometrial infection.

(g) *The Hopeless Fertility Prognosis.*—A follow-up of 72 patients who had been under observation for more than one year has shown that, of 63 traced, not one sterility patient with endometrial tuberculosis became pregnant. Many have been followed up for from five to eight years and one for 13 years. Salpingostomy has had no successes. Although rare cases of pregnancy in the presence of tubal tuberculosis have been recorded, it would seem that in cases of endometrial (and tubal) tuberculosis the restoration of fertility is wellnigh hopeless.

(h) *Relationship of Endometrial Tuberculosis to Tubal Occlusion.*—I have left to the last consideration of the incidence of tubal occlusion in cases of endometrial tuberculosis: in 89 of the 100 cases tubal insufflation was performed and showed non-patency in 55 (61.8%). This high incidence of occlusion suggested the possibility of an unsuspected subclinical tuberculous salpingitis as a source of reinfection of the endometrium, and this conception in turn led me to reconsider from a new angle the possible aetiology of tubal occlusion.

The Causation of Tubal Occlusion

There is, of course, no need to discuss tubal occlusion arising from gross tubal damage. The problem under consideration at the moment is the aetiology of blockage in tubes which seem normal on bimanual examination. In the past it has been widely accepted that in most instances the occlusion of the lumen results from gonococcal salpingitis, or from tubal infection from a near-by pelvic lesion (particularly appendicitis), or from congenital hypoplasia. My finding (Sharman, 1944)—since confirmed by other investigators—that endometrial tuberculosis is unexpectedly common (5.3%) in sterile women suggested the possibility that tubal tuberculosis of a degree not sufficient to be grossly recognizable except on laparotomy might be responsible for a much greater number of cases of tubal non-patency than is generally recognized. This led me to undertake certain investigations which I shall now discuss.

(a) Gonococcal Salpingitis as a Cause of Occlusion

There is very little positive proof that, apart from gross tubal damage, gonococcal salpingitis is a common cause of tubal occlusion. It is unusual to obtain a history of any pelvic illness in a series of sterile women, and, more impor-

tant still, there is little direct evidence that the infection ever reaches the tubes in more than a very small percentage of cases of gonorrhoea. There are few published data on this point, but with the co-operation of the Public Health Department of Glasgow I have been able to obtain the following figures, which, I think, are of considerable significance. The records of acute gonorrhoea in women who attended the principal clinic from 1930 to 1937 were surveyed with special reference to the incidence of pelvic involvement. There were only five cases of the latter in a total of 540 patients. A follow-up of the five cases revealed that one subsequently had three pregnancies, but that the others had not become pregnant. During the years 1938 to 1942, inclusive, the total number of new cases of acute and chronic gonorrhoea in females over 15 years of age attending the principal Glasgow municipal centre amounted to 987. Among these were 26 cases of acute pelvic involvement (2.6%). In 775 consecutive cases of acute gonorrhoea during the same period there were ten (1.3%) cases of salpingitis. Very careful observations made on this point show that since June, 1941, a total of 2,195 cases have been treated, of which only 22 (1%) have developed an acute febrile pelvic lesion.

Even if it is admitted that a number of mild pelvic infections may have occurred, the general conclusion appears to be that the gonococcus is seldom responsible for the occlusion of tubes which are not palpably thickened. This, of course, is not in accordance with the widely accepted view and usual teaching, but support for it is found in the statement by Siegler (1944) that a history of gonorrhoea occurred in only 3% of 397 cases where the tubal factor was investigated, and in Halbrecht's (1946) declaration that gonorrhoea is rare in Palestine, although tubal occlusion is one of the main causes of sterility in his cases.

(b) Congenital Hypoplasia as a Cause of Tubal Occlusion

The significance of this factor was first described and stressed by Clauberg in 1938; he maintained that in cases of infantile uterus the tubes often shared in the developmental deficiency and are consequently impermeable. There has been a vague general acceptance of Clauberg's theory, but I am not satisfied that it is correct. The following arguments may be raised against it: (i) Clauberg's evidence was almost entirely radiological, apart from investigations on lower animals; (ii) a large number of cases of uterine hypoplasia have shown normal tubal patency and function on kymographic insufflation; (iii) radiographs often show patency in tubes presenting the long, thin, tortuous features of the "congenital hypoplastic" type; (iv) in a small series of cases showing *definite* tubal blockage and treated by Clauberg's method with oestrogenic hormone none showed patency after treatment, as claimed by him; and (v) tubal blockage associated with uterine hypoplasia need not be due to tubal hypoplasia but may arise from other causes —for example, subclinical tuberculosis—as will be discussed later. It is not disputed, of course, that follicular hormone produces proliferation of the mucous membrane and general hyperaemia of the Fallopian tubes, as Clauberg has shown, but the point at issue is whether the hypoplastic or infantile tube is essentially a non-patent structure or not. I have approached this question from three angles: (1) a histological study of the pre-pubertal tube, (2) insufflation of the tubes of the foetus and infant, and (3) kymographic insufflation in an unselected consecutive series of young unmarried women.

1. *The Pre-pubertal Tube.*—Fallopian tubes were removed post mortem and sectioned from cases of the following ages: a 7-months foetus; a foetus stillborn at term; children aged 2 days, 10 weeks, 3 months, 4½ months, 7 months, 16 months, 3 years, 4 years, 8 years, and 10 years. Sections were cut through fimbrial, ampullary, and isthmic portions. The appearance of the tubes throughout the series is that of a patent structure, and there is no evidence that canalization of the Müllerian ducts is often, if ever, incomplete.

2. *Insufflation of the Tubes of the Foetus and Infant.*—The material studied was obtained post mortem from a series of stillborn infants and neonatal deaths in the Glasgow Royal Maternity Hospital and from fatal cases in the Royal Hospital for Sick Children, Glasgow. The examination was carried out as soon as practicable after death, usually within a few hours. Twelve cases were insufflated and all showed tubal patency.

3. *Insufflation in Unmarried Women.*—This has already been referred to in considering the tubal status. It will be recalled that 236 young unmarried girls were insufflated. The test showed that in all but four cases the tubes were permeable to gas at the first test. Three of the four had insufflation repeated at a later date without anaesthesia, and the tubes were then found to be permeable to gas. The fourth patient could not be traced.

It may therefore be stated that the evidence obtained from these three separate lines of inquiry suggests that impermeability of the tubes is seldom a congenital defect.

Irrespective of the tubal factor, uterine hypoplasia *per se* has for long been blamed for infertility. There is no convincing evidence that this is so, although minor degrees of underdevelopment are often found on bimanual examination. Arguments against its importance are: (1) the common clinical observation of pregnancy ensuing in an untreated hypoplastic uterus; (2) the finding that increase in uterine size after oestrogenic treatment may not be followed by pregnancy; (3) the fact that pregnancy may develop in a Fallopian tube or an ovary suggests that complete maturity of the uterus is not essential.

In order to investigate the matter further a follow-up was made in 1946 of all the unmarried patients between the ages of 16 and 36 who were in the Royal Samaritan Hospital for Women, Glasgow, during the years 1936-40, inclusive. These patients were divided into two groups—(*a*) in which the uterus was described as of normal size and (*b*) in which the uterus was hypoplastic. The investigation embraced all hospital units, the diagnosis having been made by one of five gynaecologists. The results were as follows: (*a*) Uterus normal: of 113 patients traced 63 had married and 42 (66.6%) of them had conceived. (*b*) Uterus hypoplastic: of 147 patients traced 78 had married and 55 (70.5%) of them had conceived.

It would appear, therefore, that minor degrees of uterine hypoplasia have but little relation to infertility and are purely an incidental finding. It is quite different with major degrees (often associated with narrow vaginal introitus and canal), which are uncommon but which seriously affect the fertility prognosis. (The relative incidence of these conditions obtained in a survey of 863 consecutive cases of primary sterility was: 437 showed a minor degree and 14 a major degree.)

(c) Subclinical Tuberculous Salpingitis as a Cause of Tubal Occlusion

It will be remembered that in the course of this investigation unsuspected subclinical endometrial tuberculosis was found in a relatively high proportion (5.3%) of sterile women. Now, since endometrial tuberculosis is almost invariably secondary to tuberculous infection of the tube, it is highly probable that subclinical tubal tuberculosis is present in at least 5.3% of sterile women. Further, it is well known that endometrium often escapes infection even when the tubes are the seat of gross tuberculous lesions, and it is therefore highly probable that in sterile women the incidence of subclinical tubal tuberculosis is much higher than 5%. This suggests the possibility that subclinical tuberculosis of the tube may be the cause of occlusion in a tube which seems normal to palpation. An endeavour was made

to obtain positive evidence on this point, and two separate methods of investigation were utilized. First, the incidence of tubal occlusion in cases of endometrial tuberculosis was studied, and, secondly, histological proof of tuberculous infection was looked for in tubes which had been found to be blocked.

The incidence of tubal blockage in endometrial tuberculosis was found to be 61.8%. This contrasts with an incidence of 26.2% over the total series of 1,478 sterile women, including those in whom endometrial tuberculosis was present.

The second line of evidence was more difficult to obtain, because only a small number of women were willing that an attempt should be made to restore patency of the tube by operation. So far I have had an opportunity of studying the histology of such tubes in 14 cases, a piece being removed in the course of salpingostomy (or of salpingectomy in the cases already described). The series is too small from which to dogmatize, but, nevertheless, it is striking that 12 of the 14 specimens showed tuberculous infection. Moreover, in the two negative cases (histologically) the appearances at operation were highly suggestive of tuberculous salpingitis. One further case (unilateral blockage) showed tubercle follicles in the resected portion of the blocked tube.

It must be borne in mind that, as in the endometrium, tubal tuberculosis is almost invariably a focal disease, and a single routine section may fail to show its presence although further sections may be positive.

In view of these findings I feel justified in putting forward the view that tubal blockage is in a considerable number of cases due to subclinical tuberculous salpingitis.

Conclusion

The problems in the investigation of sterility are many, and I have been able to deal with only a few, but it is hoped that attention has been drawn to certain aspects in which some progress appears to have been made. The field, however, is large and much exploration remains to be done.

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The British Association of Physical Medicine has issued some suggestions on the place of physical medicine in the National Health Service. In teaching hospitals there should be a director of physical medicine, with a trained staff and trainees, to conduct treatment, teaching, and research. The department would co-operate closely with the disablement resettlement officers of the Ministry of Labour. Similarly there should be a director and staff in charge of a special department in central hospitals. In district hospitals there should be a physical medicine department under the direction of a visiting specialist, and domiciliary physiotherapy should be based on the district hospitals. Physiotherapy should not be provided at health centres, since there will be a serious shortage of physiotherapists for a number of years. The B.A.P.M. draws attention to the fact that too many patients who are fit to return to work, yet still require treatment, waste time and money attending physical medicine departments in the day-time: facilities for treatment in the evening should be arranged. For patients who must take tiring journeys from home to hospital and for whom the value of treatment is thereby diminished, transport should be arranged by voluntary organizations or at the public expense.

LYMPH-GLAND BIOPSIES FOR SUSPECTED BONE AND JOINT TUBERCULOSIS

AN ANALYSIS OF 100 CONSECUTIVE CASES

BY

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AND

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Valls, of Buenos Aires (1933), first published the results of lymph-gland biopsy as an aid in the diagnosis of tuberculous bone and joint disease, and Seddon (1939) was the first to do so in Great Britain. More recently other papers on the subject have been published by Agerholm-Christensen (1941), Gellman (1941), and Webster (1942), but up to the present no large series of cases has been reported.

The object of our investigation was to determine the proportion of positive findings in 100 gland biopsies undertaken to assist in the diagnosis of arthritis in various joints, to report the subsequent clinical progress in these cases, and to describe the results of examination of lymph glands removed incidentally in the course of other operations or post mortem. Valls reported 19 gland biopsies (various joints) with 15 positive results; Seddon described 18 for the knee only, with 15 positive results; and Webster obtained 10 positive results out of 15 gland biopsies (several joints). None of these authors has produced a comparable series of incidental gland biopsies.

Lymph Drainage from Joints

Information on this subject is very conflicting. Most of the experimental work has been carried out on rabbits (Key, 1926; Kuhns, 1933), and there is no real evidence that the drainage in man follows a similar pattern. Webster (1942) in his report of 15 biopsies discusses the subject at some length and points out evident contradictions between the experimental findings, the accepted anatomical description of lymph drainage, and the results of biopsies. Trueta and Barnes (1940) showed that a considerable lymph flow was stimulated by a passive joint movement in cats, a finding which might be of assistance in determining the paths of flow from various joints.

That there may be different lines of drainage from one joint, depending on what tissues are involved, must also be borne in mind. We know very little about lymph drainage from bone: superficial tissues usually drain to the first chain of superficial glands. The fact that this form of biopsy has been more helpful in arthritis of the knee than in other joints may be due to the fact that tuberculous disease in the knee is usually confined to the synovial membrane in its early stages and is seldom a primary osseous infection. Tables I and II show the exact sites of glands removed in disease of various joints.

Technique

Before discussing the results a brief review of the technique employed is essential. Iliac-gland biopsy was the routine for hip and upper femoral disease, inguinal-gland biopsy for infections of the knee, ankle, and foot, and axillary biopsy for all joints of the upper limb. The youngest patient was aged 2 years and the oldest 69. General anaesthesia was considered the most satisfactory method, and was used in all cases. Inguinal-gland biopsy

was performed through either an oblique or a vertical incision over the fossa ovalis. The termination of the saphenous vein was exposed and a superficial gland removed from this region; a deep gland was usually found lying between the saphenous and the deep femoral veins.

Iliac-gland biopsy was performed through an oblique incision in the iliac fossa, the peritoneum was stripped forward, and the iliac glands were sought in the region of the bifurcation of the common iliac artery. In one patient with hip disease an obturator gland was removed and this gave a positive result. In one case an iliac-gland biopsy was performed for a knee infection, and in another an inguinal-gland biopsy in a patient with hip disease; neither was positive.

Axillary biopsy was performed through a vertical incision over a palpable gland, which was dissected out and removed. Half of each gland removed was put into 10% formol saline for histological examination and the other half into saline for culture and guinea-pig inoculation.

Results

Gland biopsy for this purpose was first performed at this hospital in 1936, and since May, 1939, it has been done in most cases of suspected tuberculosis. The cases analysed were dealt with during the period May, 1939, to December, 1946; for various reasons complete details are not available in every case. One hundred cases have been analysed; 62 patients were below the age of 21 (29 females, 33 males) and there were 38 adults (17 females, 21 males). Two patients have died, one from miliary tuberculosis (aged 29) and the other from cerebral haemorrhage (aged 67). In five cases no gland was found at operation (all iliac), but in two of these an inguinal-gland or obturator-gland biopsy was done instead. In two cases no record can be found of the gland-biopsy result. A histologically positive gland biopsy was obtained in 32 cases, and in one further case the guinea-pig inoculation was positive, though no histological evidence of tuberculosis was found in the gland. A guinea-pig inoculation was performed in only 47 cases; if this had been carried out in every case and if serial sections of the gland had been examined and culture performed, it is probable that the number of positive results would have been greater. No positive results were obtained in the few cases cultured. In five cases the gland histology and guinea-pig inoculation were both positive; in one case the histological report was positive and the animal inoculation negative, while in another the opposite state of affairs existed. In two cases the histology was such that, although it suggested a tuberculous infection, no definite opinion could be given; in one of these the guinea-pig inoculation was negative and in the other it was not done. In three cases the deep inguinal gland proved to be positive histologically while the superficial inguinal gland was negative; in one case the opposite occurred; and in three cases both superficial and deep glands were positive.

TABLE I

Joint	No.	Gland	Positive	Negative
Hip	29	Iliac 24; 1 obturator; 1 inguinal	8	18*
Knee	60	Inguinal	23	35
Ankle	5	,,	—	5
Elbow	3	Axillary	2	1
Subastragalar	1	Inguinal	—	1
Trochanter	2	,,	—	2

Hip	18 negative	7 clinical progress	Proved Tb.
	8 positive	4 ,, ,,	,, not Tb.
Knee	35 negative	11 ,, ,,	,, Tb.
	23 positive	1 ,, ,,	,, not Tb.
	2 no results†		
Ankle	5 negative	1 ,, ,,	,, Tb.
		2 ,, ,,	Doubtful)
Elbow	1 negative		Proved Tb.
Subastragalar	1 negative		,, ,,

* No gland removed in three cases.
† No record of result in these two.
In five no iliac gland was found; 1 obturator (+) and 1 inguinal (−) gland were removed instead in two cases.

Of these cases 59 were regarded as tuberculous on clinical grounds; 35 were regarded as non-tuberculous; in two there was some doubt. Four cases were too recent for positive assessment. Nine cases, all in the knees, were proved to be tuberculous by examination of the synovial fluid, synovial membrane, or bone (following excision), and one was indefinite; in seven out of these nine cases the gland biopsy was negative. In five cases (see Table II) positive gland biopsy the joint recovered over two-thirds of the normal range of movement, and in one of these recovery was complete. In none of these five cases has there been any definite confirmation of the diagnosis by other means.

TABLE II

Case	Age (yrs)	Skiagram	Joint	Highest E.S.R.	Clinical Progress
1	12	Acetabular focus	L. hip	27 mm.	2/3 movement 3 yrs. after
2	13	Decalcification	L. hip	10 ,,	2/3 ,, 6 ,, ,,
3	10	,,	L. hip	17 ,,	2/3 ,, 5 ,, ,,
4	10	Epiphysial focus in femur	R. hip	45 ,,	2/3 ,, 2½ ,, ,,
5	6	Nil	L. knee	5 ,,	Normal knee 4 ,, ,,

In 10 cases with a positive gland biopsy the highest erythrocyte sedimentation rate while in hospital was 10 mm. or less; of these 10 cases three would not be regarded as tuberculous on clinical grounds alone. In this series there are records of 47 Mantoux and/or patch tests: 36 were positive, and of the 11 negative three were adults. All 33 positive gland biopsies were positive to a Mantoux or patch test. In only 17 of the 33 positive gland biopsy cases did skiagrams show definite changes, that is, joint destruction or a bony focus. Of 22 biopsies done within three months of the onset of symptoms 11 were positive. Twenty-three positive results were obtained in the 62 cases under 21, and 10 positive results in the 38 adults.

TABLE III.—*Control Series*

	Age 50+	Age 20–50	Age 0–20
Natural	14	11	1
Scarred	20	5	2
Fibrosed	11		
Fatty infiltration	6	0	0
Tuberculosis	0	0	1

Over a period of three months 71 inguinal lymph glands were removed—60 at necropsy and 11 during the course of operations for other conditions, mostly herniotomies. Table III shows the results. Only one of this control series had tuberculosis of the gland. In that series there are two points worthy of note. The first is the age distribution, the second the number reported as scarred or fibrosed. We include these figures for the control series as they are of interest; but we do not feel that any definite conclusions with regard to the value of adenopsy can be drawn from them, and we propose to continue the series, including only the younger patients, in an attempt to learn something about the cause of the scarring which is so common in the older age group. In reporting on this series the pathologists point out that although there is no definite evidence of tuberculous infection in these glands it is not possible to state definitely that the scarring is not due to old healed tuberculosis.

Discussion

The importance of all ancillary methods of narrowing down the differential diagnosis in arthritis of every kind

needs no emphasis. Unfortunately many of the procedures upon which the surgeon or physician must rely are not altogether reliable.

The removal of regional lymph glands as an aid to diagnosis in chronic arthritis of uncertain origin is a comparatively new procedure and the degree of accuracy is not well established. Most of the series of cases that have previously been published have been relatively small and the follow-up of short duration. Here we have been primarily concerned with three things: whether the right gland has been removed; whether the clinical course has borne out or contradicted the pathological findings; and, in an unselected series of apparently normal glands obtained from the living or at necropsy, the proportion showing tuberculous changes. So far as the first point is concerned there is not enough information available to give any reliable opinion, though it is obviously necessary to take both superficial and deep glands when the knee is involved. The one case of hip disease in which the iliac gland was negative and the obturator positive is worthy of note.

The accuracy of the procedure can be related only to the hip and the knee, as the numbers are too small in relation to the other joints. In the hip the clinical progress of the lesion in approximately one-third of the cases in which the biopsy was negative established a diagnosis of tuberculous disease, and in half of those in which biopsy was positive subsequent progress suggests that the lesion is not tuberculous. In relation to the knee-joint the findings are similar so far as the negative results are concerned, nearly one-third having been proved tuberculous; however, of the cases giving positive results one alone has progressed in such a way that a clinical diagnosis of tuberculosis is impossible.

It is likely, as has already been pointed out, that routine serial sections of glands and guinea-pig inoculations would increase the number of positive findings. As things stand at the moment it seems that no great reliance should be placed on a negative finding from the regional gland biopsy, and that if the result is positive it is likely that, in the presence of a suggestive clinical picture, this can be accepted as confirmatory evidence.

Conclusion

Gland biopsy is a valuable accessory means in the diagnosis of tuberculous infection of bones and joints. There were 33 (56%) positive results in 59 cases of tuberculous infection—a lower rate than those given by other authors.

A positive biopsy does not necessarily mean that the joint is tuberculous.

A higher proportion of positive results appears to be obtained if the biopsy is done early in the disease—10 out of 14 cases (71%). (21 biopsies were done within three months, but only 14 of these cases could be regarded as tuberculous on clinical grounds.)

An early positive gland biopsy gives strong support to a diagnosis of tuberculous infection before any changes that can be shown by *x* rays are present.

As is well known, a normal erythrocyte sedimentation rate is of no value in excluding tuberculous disease of the joints, 10 cases out of 59 having shown a normal E.S.R.

Clinical findings and progress, *x*-ray appearances, gland biopsy, and E.S.R. must all be taken together to obtain the most accurate diagnosis in chronic bone and joint disease.

We are indebted to the surgeons at the Wingfield-Morris Hospital for their permission to review these results and for helpful suggestions. We are also grateful to Dr. A. H. T. Robb-Smith and the pathological department at the Radcliffe Infirmary for help with the paper and for doing all the control series.

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THE TREATMENT OF INEVITABLE, INCOMPLETE, AND SEPTIC ABORTION

AN ANALYSIS OF 600 CONSECUTIVE CASES

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Abortion is the most common serious complication of pregnancy, with an incidence of probably 25%. It is responsible for a greater wastage of potential and actual citizens than any disease, for it carries a mortality of 100% for the foetus and is associated with grave risks to the life and health of the mother. It is estimated that 700,000 infants are lost annually by abortion in America and that 3,500 mothers die in the United States every year as a result of this complication (McCormick, 1944). It is true there is evidence to suggest that the incidence of foetal deformity is high in these cases, but none the less the loss of potentially healthy citizens is great.

The purpose of this paper is not to discuss the prevention of abortion but to consider its treatment once it has become inevitable, incomplete, or septic. For that reason the discussion is concerned only with the maternal aspect of the problem. Throughout the series analysed we have accepted the following criteria for the diagnosis of these three conditions: (1) An abortion was considered inevitable when bleeding was associated with uterine contractions and dilatation of the internal ostium. (2) An incomplete abortion was diagnosed when bleeding persisted following the abortion and examination revealed a bulky uterus, usually with a patulous cervical canal, or when it was known for certain by inspection of the material passed that placental tissue had been retained. The subsequent removal or passage of placental fragments confirmed the diagnosis. (3) An abortion was considered septic when it was associated with pyrexia for which no other cause was found, offensive or purulent discharge, or evidence of pelvic inflammation. It should be noted in this respect that on occasion there is pyrexia and even hyperpyrexia during the process of spontaneous evacuation of a uterus with no preceding or subsequent evidence of uterine, pelvic, or general infection. Such cases were not included as septic abortions in the series analysed.

The recognized immediate dangers to the mother are death or serious illness as a result of haemorrhage or infection, and the following are figures given by different authorities as an assessment of the extent of these dangers. McCormick (1944) states that in America 25% of maternal deaths are due to abortion and that five in every 1,000 mothers who abort die as a result. Parish (1935) states that in 1933 463 maternal deaths were registered in England and Wales as being due to abortion, and

23% of these were attributed to haemorrhage. It was estimated from the Statistical Review of the Registrar-General for 1937 (p. 149) that 21% of all maternal deaths were due to abortion and 29% of maternal deaths from sepsis were due to septic abortion.

There are two main schools of thought concerning the treatment of abortion once it has become inevitable or incomplete. Those who may fairly be called the "non-interventionists" believe that if left alone the uterus will ultimately empty itself, and if it is allowed to do so the mother is subjected to the least possible risk. F. J. Browne (1946) advocates this attitude to treatment and quotes the work of Winter, Walthard, Dietrich, and Dubrowitsch in support of his statement that the mortality is twice as high with active as with conservative treatment. It should be noted, however, that all the results referred to were obtained before the days of specific chemotherapy. Surgeons and departments subscribing to this view require a great many gynaecological beds—or else refuse to admit abortions at all—because it often takes several weeks for an abortion, even early in pregnancy, to be completed in this way. As a result of this the anomalous situation arises that many teaching units in gynaecology, and even some special hospitals for women, refuse to admit abortion cases because the beds necessary for their treatment cannot or will not be offered.

The second school may be described as the "interventionists." They believe that all inevitable and incomplete abortions which are not rapidly and spontaneously completed should be treated by surgical evacuation of the uterus. This school requires many fewer beds, for with this treatment the stay in hospital is relatively short. This fact is not of course an argument in favour of the method unless it can be shown that in principle and practice it is at least as safe as that advocated by the "non-interventionists." We believe this can be proved.

The Case for Intervention

Now, it has for long been accepted by our surgical colleagues that a wound heals most rapidly when it is cleansed of non-viable debris. In traumatic surgery the principle of treatment is to excise dead tissue and to leave vital raw areas for healing. We suggest that in gynaecology and obstetrics there has been a tendency to ultra-conservatism in the treatment of gestational products retained *in utero*. The wound at the placental site—for wound it is—has been credited with physiological properties to which it is not entitled. It has no magical powers of rapid healing when its surface is covered with adherent necrotic debris. Necropsy rooms yield ample proof of this fact. There is even the probability of secondary infection resulting from this retained material, but this aspect of the problem is now being studied separately and will be the subject of a later publication.

Believing that the principles of wound treatment accepted in general surgery should be applied to the treatment of abortion, we instituted an interventionist attitude as the basis of treatment for all cases of inevitable and incomplete abortion admitted under our care to the Radcliffe Infirmary, Oxford. Impressed by the early results, we have continued this treatment for eight years and now present a brief analysis of the work done. Before instituting this routine one of us (J. S.) had considerable experience of the conservative attitude during resident appointments in two separate teaching units elsewhere.

A Series of Cases Treated Surgically

The series now analysed consists of 600 consecutive cases treated surgically by us in the wards of the Radcliffe Infirmary and associated private beds, and by "flying-squad teams" for which we were responsible. This series does not include 58 cases of threatened abortion, spontaneous complete abortion, and missed abortion. There were no deaths in this group. Five hundred patients were treated in the general wards and 100 in private beds. Forty-two patients were frankly septic on admission and two of these were suffering from a generalized *Clostridium welchii* infection. Many were admitted in a critical condition as a result of extreme blood loss. When the occasion demanded it the patient was not transferred to the ward, but resuscitative measures were adopted in the casualty admitting-room, from which the patient was later taken direct to the theatre. Avoidance of unnecessary handling at this stage can be life-saving. On 71 occasions blood transfusion was administered, and this was always started before taking the patient to the theatre and was usually continued during the operation. In this way the exsanguinated patient was better prepared for operation, the risk of early transfusion reactions being masked by anaesthesia was reduced, and in the unlikely event of further extensive blood loss in the theatre there was a minimum of delay in replacing it. Rh-immunization is now avoided by preliminary testing, or is reduced to a minimum in extremely urgent cases by the use of Rh-negative blood. When the patient was suffering from extreme blood loss or shock it was often necessary, because of venous spasm, to give the blood under pressure as previously described (Stallworthy, 1939). When sepsis was present chemotherapy was begun, 2 g. of a sulphonamide being given as an initial dose, followed by 1 g. four-hourly. If haemorrhage was severe the patient was taken to the theatre without further delay; if it was not severe operation was postponed for twelve to twenty-four hours so as to obtain a satisfactory blood concentration of sulphonamide drug.

Method

Once the patient was considered fit for operation the method of treatment was as follows. After a preliminary shaving and washing of the vulva and catheterization the patient was taken to the theatre, with the transfusion still running. In critical cases the anaesthetic was not started until the surgeon was gowned and ready to operate. Early in the series ether was used extensively, but this was replaced by hexobarbitone and then by thiopentone, as being less disturbing to the patient. Small doses, often only 0.25 g., were used. After the vulva and vagina had been swabbed with flavine in spirit, 1 in 1,000, the surgeon gently examined the pelvis to determine the exact position of the uterus and the state of the cervix. Failure to make this preliminary examination can result in the soft wall of a pregnant retroverted uterus being perforated by sound, dilators, or forceps. If the canal was patulous and placental tissue was in reach it was gently removed with the gloved finger. If not, then the cervix was exposed and an oxytocic drug was injected under vision into the cleaned cervix. Early in the series 0.5 ml. of "pituitrin" was used, but this was later abandoned in favour of 0.5 mg. of ergometrine. The change was made because of the generalized pallor and occasional sweating associated with the use of pituitrin and the rare but unnecessary fatalities when used in obstetrics. The length of the uterine cavity was gently measured with a sound. Unless it was already patulous, as was often the case, the cervical canal was carefully dilated to the size of a No. 14–16 Hegar dilator. Sponge forceps were then carefully introduced, opened, rotated through 90 degrees, closed, and withdrawn. This was repeated until no further pieces of placental tissue were removed in this way. The cavity was then gently and thoroughly explored with a blunt flushing curette through which passed a slow stream of dettol (2 dr. to 1 pint—7 ml. to 568 ml.) at a temperature of 110° F.

(43.3° C.). This removed small fragments of tissue missed by the forceps and also stimulated uterine contractions, as shown by the rapid decrease in the length of the uterine cavity and the cessation of any bleeding. The cavity was then packed with a sterile 2-in. (5-cm.) gauze roll, which was removed six hours later. In septic cases the pack was impregnated with 10 g. of sulphathiazole powder. This pack serves a dual function. By promoting uterine contractions and by direct pressure on the placental site it safeguards against further bleeding during the stage of recovery from the anaesthetic, and with its removal it clears any small fragments or clot which if left could promote discharge, further haemorrhage, and possibly infection. Following the removal of the pack there was rarely more than a slight stained discharge, which usually ceased within forty-eight to seventy-two hours of the operation. The patient was allowed up thirty-six to forty-eight hours later, and if the home conditions were satisfactory was discharged on the third or fourth day. An attempt was made to discover the cause of the abortion, and advice was given on the necessary care during the early weeks of a subsequent pregnancy. Iron was given to combat anaemia secondary to the blood loss, and the patient was requested to report for a follow-up examination in a month.

Results

There was one death in the series, the patient being one of the two whose abortion was complicated by a generalized *Cl. welchii* infection. This patient was considered to be moribund on admission. Abortion had occurred one month previously, and following this there had been daily haemorrhage until at the time of admission the haemoglobin level was 22%. Because of the state of collapse and the general appearance of the patient a provisional diagnosis of gas-gangrene infection was made, and treatment was instituted with serum in addition to transfusion and chemotherapy pending the report of the bacteriologist on the high vaginal swab. Death occurred within twenty-four hours of admission, and necropsy confirmed the presence of *Cl. welchii* septicaemia.

As already stated, it was common for patients with suitable home facilities to be discharged on the third or fourth day. The average length of stay in hospital was 7.5 days for the 500 non-private patients.

Summary and Conclusions

Six hundred consecutive incomplete, inevitable, and septic abortions treated by surgical evacuation of the uterus followed by the insertion of a pack for six hours are analysed.

Forty-two patients were infected on admission—two with *Cl. welchii*. In all infected cases specific chemotherapy was started before evacuating the uterus.

Seventy-one transfusions were given; the average stay in hospital was 7.5 days; and there was one death in the series—a mortality of 0.17%.

Surgical evacuation of the uterus in inevitable, incomplete, and septic abortion, if carefully performed, provides a safe and efficient method of treating the condition.

The method advocated reduces the length of stay in hospital—an important factor in these days of acute shortage of beds.

The low mortality (1 in 600) may be attributed to the method of treatment and to the fact that a team skilled in handling these cases was responsible for them. Routine treatment is easy to prescribe, but on the nice decision of when to administer it may hang the balance between life and death.

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WORK OF A TUBERCULOSIS CONTACT CLINIC FOR YOUNG CHILDREN, 1941-5

BY

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In Newcastle-upon-Tyne, where the mortality from tuberculosis has always been above the average for the country, 150 children under the age of 5 years died from that disease between 1931 and 1940. In 1941, therefore, as part of a policy of investigating the causes of death in infancy and early childhood, a clinic was established for the observation and care of children under the age of 5 years who were known to have been in contact with tuberculosis. The object was to obtain information concerning the mortality and morbidity of tuberculosis in children of families containing a notified case of the disease and to ascertain the relation which this bears to the total mortality and morbidity for the same age group within the city. With this information it was hoped that it would be possible to estimate the accommodation required in Newcastle-upon-Tyne for the care of such young children.

This clinic resembles closely the diagnostic clinic for childhood tuberculosis suggested in the British Paediatric Association Report in 1943, and it seems appropriate to give a preliminary survey of the first 4½ years' work in order to show the usefulness of the investigation and the part which a clinic of this nature can play in a city tuberculosis service. This report covers the period June, 1941, to December, 1945, and the children were under 5 years of age when first examined.

Organization of the Clinic

The work is carried out by arrangement with the tuberculosis medical officer in a special clinic established in the children's department of the Newcastle-upon-Tyne General Hospital. *X*-ray facilities are available and parents are more willing to bring young children to such a clinic than they are to take them to a tuberculosis dispensary. Full information concerning children in infected families is sent each week to the clinic from the tuberculosis medical officer, and this is the starting-point for the observation.

For the first six months, until January, 1942, the homes of the children were visited by a health visitor of the City Child Welfare Department chosen for this work; the health visitor explained the purpose of the visit and did a tuberculin patch test. If the test was positive the parents were asked to bring the child to the clinic for clinical and radiological examination. At the beginning of 1942 this arrangement was changed. All the children are now visited and their parents are asked to bring them for examination (tram or bus fares are paid when this seems necessary). The patch test was abandoned and the intradermal Mantoux test (0.1 ml. of 1 in 1,000 old tuberculin) is used as a routine; every child is radiographed.

During the war years demands upon the time of mothers of young children became heavy, and especially so with illness in the house. From the outset, therefore, the work was organized to avoid waste of time in hospital or unnecessary return journeys to the clinic. The tuberculin test done at the first visit is read either by the health visitor calling at the house on the third day or by the doctor at the welfare centre nearest the child's home. When the result is known the clinical, radiological, and social findings

are correlated and a decision made concerning any action required; the parents are notified by letter of the results of the examination, and are told if we wish to discuss the matter further and when we wish to see the child again. For return visits a further letter is sent about seven days before the visit is due. At the same time a complete report is sent to the tuberculosis medical officer and the family doctor. The interval that elapses between visits is not fixed but is related to the risk under which the child is living.

So far the response of the parents has been very good and appreciative. Only 10% have failed to attend. A few have not been interested; one or two wished to have a "private opinion"; but the most common cause of failure seems to be fear of tuberculosis and unwillingness to face the possible consequences of examination. An explanation of the examination and of the skin test is made at the visit and everything is done to ensure that the parents understand its significance.

Failure to react to 1 in 1,000 dilution of old tuberculin by intradermal injection has been accepted as negative, and stronger solutions have not been used. Every care is taken in the technique of injection and the management of the individual child, but my experience has not coincided with that of Gaisford (1946), who states that this test can be used without disturbing the children. Indeed, I am sure that a tuberculin test which avoids the use of an injection is most desirable and is particularly important when repeated tests are required; the modified jelly test as described by Deane (1946) might be the best method of meeting this difficulty, and the intradermal test would be used only when the result of the percutaneous test was not conclusive.

Notification is always a difficulty, and in our work only cases admitted to hospital or sanatorium have been notified as suffering from tuberculosis. This difficulty has been discussed previously by Moncrieff (1945) and in the British Paediatric Association Report (1943). The blood sedimentation rate has not been used.

Results

From June, 1941, to December, 1945, we received information concerning 569 children and we examined 520 at least once. Table I shows the frequency of exposure to

TABLE I.—*Number of Children in Various Age Groups and the Types of Tuberculosis to which they had been Exposed*

Age Group	Total in Group	Type of Tuberculosis in Index Case								
		Pulmonary	Lymphatic All Types	Serous Pleural Effusion	Bone	Abdominal	Renal	Miliary	Meningeal	Skin
0–1	109	88	5	8	3	3	—	1	—	1
1–2	96	72	12	5	4	1	—	—	2	—
2–3	101	55	11	19	13	2	—	—	—	1
3–4	115	88	8	10	5	3	1	—	—	—
4–5	99	66	13	10	3	4	1	2	—	—
	520	369	49	52	28	13	2	3	2	2

various forms of tuberculosis. Table II gives the results of the first tuberculin reaction in children in contact with pulmonary tuberculosis and shows that half those in contact with "open" pulmonary tuberculosis and one-fifth of those in contact with "closed" pulmonary cases were positive when first examined. At subsequent examinations 35 of these children were observed to become tuberculin-positive, but the difficulties and staff shortages of 1943 and 1944 made it impossible to obtain the complete tuberculin conversion numbers for the whole group. Of 142 positive reactors at the first examination 110 came from known sputum-positive cases and 32 from "negative cases"; of 227 negative reactors 103 were contacts of sputum-positive cases and 124 of sputum-negative cases. The fact that half the children examined after contact with open pulmonary

TABLE II.—*The Results of First Tuberculin Test in Children in Contact with Pulmonary Tuberculosis*

Age of Child	Index Case: Positive Sputum	Tuberculin Test		Index Case: Negative or No Sputum	Tuberculin Test		Total Tuberculin Positive
		Pos.	Neg.		Pos.	Neg.	
0–1	42	15	27	46	3	43	18 (20·5%)
1–2	42	21	21	30	4	26	25 (34·7%)
2–3	36	19	17	19	9	10	28 (50·9%)
3–4	55	27	28	33	8	25	35 (39·7%)
4–5	38	28	10	28	8	20	36 (54·5%)
	213	110 (51·6%)	103	156	32 (20·5%)	124	142 (38·5%)

tuberculosis were still tuberculin-negative when first examined is of extraordinary interest.

Results of the examination of contacts of cases of tuberculosis other than pulmonary are given in Table III; only

TABLE III.—*Results of First Tuberculin Tests upon Contacts of Index Cases Suffering from Forms of Tuberculosis other than Pulmonary*

Age Group	Serous Effusion		Lymphatic Tuberculosis		Bone Tuberculosis		Abdominal Tuberculosis		Other Forms	
	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.	Pos.	Neg.
0–1	—	8	—	5	—	3	—	3	—	2
1–2	—	5	1	11	—	4	—	1	1	1
2–3	2	17	2	9	1	12	—	2	—	1
3–4	—	10	—	8	—	5	—	3	—	1
4–5	1	9	3	10	—	3	1	3	—	3
	3	49	6	43	1	27	1	12	1	8

12 out of 151 were positive at the first examination and only six were subsequently known to become positive.

Hospital Admissions and Mortality

Thompson (1944) has stated, and I agree, that there is little or nothing which can be done in hospital for children with symptomless primary tuberculosis which cannot be done in a *good* home, and the only reasons for admission to hospital are unfavourable home conditions or the absence of any other method of separation from infection. Under the circumstances which existed during the years 1941–5 we could not admit children to hospital or other institutions to prevent initial infection or further exposure, and our criteria for admission have been clinical symptoms such as cough, wheezing, and loss of weight, progressive extension of radiological shadows, bone tuberculosis, or extremely adverse social conditions during the early phase of tuberculous infection, when the condition is most likely to become generalized.

Of the group of 369 children who had been in contact with pulmonary tuberculosis 57 were admitted to hospital for one of the reasons given above and a further eight were admitted with acute disseminated tuberculosis or tuberculous meningitis. These 65 children represented at least 30% of all children under the age of 5 years admitted to city hospitals for tuberculosis within the same time.

The mortality of the same group of 369 children exposed to pulmonary tuberculosis has been 5% (19) to the end of 1945 (Table IV)—significant enough to make the use of the word "benign" in connexion with childhood tuberculosis a very dangerous procedure. Of the group in contact with pulmonary tuberculosis 17 died in hospital from proved tuberculosis, two died at home with illnesses which were probably tuberculous, and at a recent follow-up of the families concerned it was found that four other children who had not been examined because they were born after the original notification had died of proved tuberculous

meningitis. Thus in 320 families containing an adult with pulmonary tuberculosis there was a minimum of 21 deaths of young children in 4½ years.

TABLE IV.—*Age Distribution of Deaths from Tuberculosis Occurring in 369 Children Contacts of Pulmonary Tuberculosis Exposed Between June, 1941, and December, 1945 (Positive and Negative Sputum)*

Age at First Exposure	No. of Children Exposed	Deaths to December, 1945	
0–1	88	8 (9·0%)	(7·5%)
1–2	72	4 (5·5%)	
2–3	55	2 (3·6%)	
3–4	88	4 (4·5%)	(3·4%)
4–5	66	1 (1·5%)	
	369	19 (5·0%)	

The distribution of the deaths in relation to the age of the child at first exposure is shown in Table IV, confirming the well-recognized fact that the risk of exposure is greatest in the first year and decreases as age advances, with a marked fall after the age of 2 years.

During the time under consideration there were 66 deaths from tuberculosis in the 18,000 children under 5 years in the city; 19 of these (30% of the total) were known to come from the small group of 369 at special risk following contact with pulmonary tuberculosis. Examination of the records of the 19 children who died showed that nine had been tuberculin-negative at the first examination, and eight of these were under two years of age.

Discussion

The work here described was undertaken as an exercise in preventive paediatrics in an industrial community of 270,000 inhabitants in which infantile and child mortality has always been high. The problem was to find methods of reducing the deaths from tuberculosis in children of a particular age group, the majority of which were undoubtedly caused by the presence in the community or the household of adults with open pulmonary tuberculosis. Ultimately the child's only effective protection is by the separation of the infector from the community for as long as may be necessary to render him non-infective. This implies the maintenance of his family while he is away and the provision of suitable employment after his return. But this aim seems so far from realization in most areas that it is appropriate to consider if anything can be done to reduce the morbidity and mortality in the group at special risk—the children in home contact with pulmonary tuberculosis.

A large literature dealing with the effects of home contact on young children already exists; all the essential data concerning the risks are known. Where the logical conclusions of this knowledge have been applied, as in Sweden, the results obtained have proved beyond all doubt that the deaths of small children from tuberculosis can largely be prevented. It is difficult to know why these conclusions have not been applied in England or why the Swedish work has not received more attention, but the fact remains that little has been done by the public health services to provide care and treatment for this particular age group.

It has been shown repeatedly—in England by Cox (1929), in America by Brailey (1940), and by many other authors, quoted by Kayne (1935)—that children in households containing an adult suffering from pulmonary tuberculosis are subject to a much higher mortality from tuberculosis than that experienced by other children of their age group. Furthermore, all observers have agreed that the primary infection is most dangerous if acquired in the first year, that there is a considerable risk in the second year, and thereafter the risk falls to the age of 5 years. The least dangerous period to acquire the primary infection appears to be between 5 and 15 years. Many figures have been compiled to show this, but it is sufficient here to quote only those of Braeuning and Neumann (1929), Table V. If, therefore, it is true that all individuals sooner or later acquire a tuberculous infection, it is equally true that they should not be allowed to do so in the first five years of life.

The problem of the young child in a tuberculous household is to devise methods of separating him from continued contact if he is free from infection when first examined or to consider what can be done to separate him from further infection if he has an active primary focus; it seems quite illogical to be compelled to wait until the child does become infected before arrangements for his care are possible. Sometimes separation can be accomplished by allowing the child to go to a relative; but the number of cases in which this is possible is not large, and this method of separation is often incomplete. Two other methods are available: admission to a home for infants or to another family group, the parents of which would act as foster parents until the danger of infection has disappeared. In Sweden both methods have been used, and out of his great experience Wallgren (1939) advises the infants' home rather than the foster parent. He considers the dangers of infection in a well-managed nursery are not greater than in a private house, and he finds parents are more willing to allow their children to enter institutions than to join other families. Another advantage of the institution is that if B.C.G. vaccine is used to produce an artificial temporary immunity the children can stay there for the requisite period of three months while the vaccine is given and hypersensitivity is developed.

TABLE V.—*Mortality at Various ages: Exposure to Open Pulmonary Tuberculosis (Braeuning and Neumann, 1929)*

Age when Contact Began (Positive-Sputum Contact)	No. of Cases	Tuberculosis Mortality	
		Within One Year	At end of Five Years
0–1 year	246	6·1%	8·1%
1–5 years	569	1·4%	1·4%
5–10 ,,	618	0·49%	1·4%
11–15 ,,	647	Nil	1·0%

In Newcastle-upon-Tyne during the period under consideration 227 children in contact with pulmonary tuberculosis were negative when first examined; even if the admissions to a home for infants had been restricted to those known to be in contact with open pulmonary tuberculosis it would have been necessary to offer approximately 103 places in 4½ years. To estimate the average length of stay is difficult, but the need could probably have been met by the provision of an infants' institution of 40 beds, the cost of which, apart from establishment and capital charges, would be approximately £4,000 a year. The foster parent scheme should, theoretically at least, be more satisfactory than the institution. It would cost approximately £3,000 a year, but it would be difficult to obtain enough suitable foster parents.

In Sweden B.C.G. vaccine has been widely used for the past 20 years and the Swedish workers consider that children who become tuberculin-positive after the administration of the vaccine acquire an immunity which enables them to resist infection under natural conditions for about two years. Recently the National Association for the Prevention of Tuberculosis and the Joint Tuberculosis Council have presented a memorandum to the Ministry of Health (Tytler, 1946), in which they urge trials of B.C.G. vaccine in England.

Our indications for the hospital treatment of infected children have already been given. The essential object of

special treatment is to give the child with a primary infection the best opportunity of resisting and then healing the lesion. In 4½ years 57 children were admitted to hospital from the contact group for clinical and social conditions. If more beds had been available at least 80 children would have been admitted, and I estimate that in Newcastle-upon-Tyne at the present time a tuberculosis contact clinic of this type requires the use of 10 hospital beds for children under the age of 3 years. This number does not include accommodation for children with acute disseminated tuberculosis and children over 3 years of age who can be sent to a children's sanatorium.

These estimates give some indication of the provision which I consider would be required to meet the problem of primary tuberculosis in young children of tuberculous families in Newcastle-upon-Tyne. The assumption I have made is that the present difficulty of removing the adult infector will not be changed materially in the immediate future; as, however, more beds become available in sanatoria and the economic provision for families is extended the need for special protection for children will be reduced proportionately. Until then the work of diagnostic clinics will, I believe, be a valuable part of the tuberculosis service if the case-finding mechanism is supported by the provision of hospital beds and methods of separating children from danger of infection. If there is no such backing then one can agree with Thompson (1944) that the examination of children as contacts is not of much value apart from clinical and epidemiological interest.

Summary

The organization and work of a clinic for the examination of tuberculosis contacts has been described.

From June, 1941, to December, 1945, 520 children under the age of 5 years were examined: 369 contacts of pulmonary and 151 of other types of tuberculosis.

At the first examination 142 of 369 contacts of pulmonary tuberculosis were tuberculin-positive; of 151 contacts of other types of tuberculosis 12 were positive.

The mortality from tuberculosis in the 369 children in contact with pulmonary tuberculosis has been 5% to December, 1945.

In children under the age of 5 years 30% of the morbidity and 30% of the total mortality from tuberculosis occurred in a small group at special risk.

An attempt has been made to estimate the provision required to meet the needs of this group: (*a*) to separate the uninfected from further exposure; (*b*) to change the environment of the infected when this is necessary for either social or medical reasons.

I wish to thank Prof. J. C. Spence for criticism, Dr. G. Hurrell and Dr. E. G. Brewis of the City Tuberculosis Service for their co-operation, Dr. S. M. Livingston for continuing the work during the most difficult period of the war, and the health visitors, Misses F. M. Hatfield and E. Hann, for their constant enthusiasm and patience.

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Memoir of David Little, M.D., by his daughter, Dora Little (from whom copies may be obtained at 16, Fairacres, Roehampton Lane, London, S.W.15), is a personal note on the famous ophthalmologist, and includes a facsimile of a letter from Florence Nightingale as well as a number of portraits and illustrations.

RHABDOMYOSARCOMA CAUSING ACUTE RETENTION IN INFANTS

BY

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Rhabdomyosarcoma is rare, but two cases in which this growth caused acute retention in infants were admitted to the Royal Victoria and West Hants Hospital, Bournemouth, during 1944–5.

Nine cases of rhabdomyosarcoma of the urinary bladder have previously been reported, Case I below being the tenth. Seven of these occurred in infants aged from 3 days to 2 years. The remaining three were in adults of 23, 43, and 69 years. Rhabdomyosarcoma of the prostate or prostatic region has been reported in 19 cases, and Case II below is the twentieth. Although the origin of this growth is usually assumed to be in the prostate, Hirsch and Gasser (1944) suspect that it may belong to the class of similar growths which occur along the vas deferens.

The literature on both types of growth has been excellently reviewed by Khoury and Speer (1944), who also discuss the pathogenesis, pathology, and histology of these tumours.

Case I

A 17-months-old male child was admitted to hospital on July 15, 1944, with a history of difficulty in micturition for more than four months. Apart from an inguinal hernia, which had been "cured" 12 months before by wearing a truss, he had not suffered from any ailments since birth until the onset of the urinary trouble. During the four months before coming to hospital his dysuria had been treated by circumcision and urinary sedatives, without relief.

On examination the bladder fundus was level with the umbilicus, forming a tense globular swelling. Rectally the bladder was found to be partly filling the pelvis. A straight skiagram revealed no opaque calculi in the urinary system. The blood urea was 51 mg. per 100 ml. Slow decompression of the bladder was instituted, but it was soon found that despite the height of the fundus 2 oz. (56 ml.) of urine could not be obtained at hourly intervals. A cystogram showed a mottled picture suggesting a large cauliflower mass arising inferoposteriorly in the bladder.

At operation on July 24 the bladder, which was the size of a cricket ball and had hypertrophied walls, was found to be filled with numerous rounded myxoma-like pieces of tissue varying in size from a pea to 3.5 by 2.5 by 2 cm. Some pieces appeared to be detached and floating free, others were attached by filamentous pedicles, but the most recent growth arose from a broad pedicle about the size of a postage stamp situated antero-laterally to the internal urethral meatus. Some 8 oz. (225 g.) of growth was removed and the pedicle was diathermized.

Histological examination showed that the pieces of tumour consisted of connective tissue interspersed with spindle and cylindrical cells which in many places were distinctly eosinophilic and had faint cross-striations. Some of the spindle-celled areas showed a moderate number of mitotic figures. A layer of partly denuded stratified epithelium clothed the surfaces of the growth.

After operation the patient's convalescence was slow and the suprapubic wound did not heal completely. A month later he complained of pain on defaecation and micturition, and at the end of two months a polyp of growth was extruded from the suprapubic wound. On Nov. 6 the bladder was reopened and a further 8 oz. (225 g.) of growth removed. This was of the same myxomatous, avascular appearance. The pedicle had not enlarged since the previous operation and the ureters and urethra were free from invasion. The pedicle was ap

diathermized. *X*-ray therapy was given after the operation and again in January, 1945. However, the patient's condition deteriorated, and a fistula between the bowel and the bladder formed before he died of exhaustion on Feb. 24, 1945.

At necropsy the bladder was found to be full of the proliferating growth, which had completely invaded the vesical mucosa. A fistula had formed between the ileum, bladder, and suprapubic wound. The right kidney and ureter were normal, but the left ureter was much dilated and there was an early left hydronephrosis. No secondary growths were found.

Case II

A male child aged 9 months was admitted to hospital on Nov. 23, 1945, with a history of slight diarrhoea for one week. Two days before admission he had passed blood per rectum and since then had not micturated. He had a slight cough.

On examination he looked pale and toxic. His temperature was 100.4° F. (38° C.), pulse 142, and respirations 36. The abdomen was distended, and a cystic swelling, dull to percussion, arose out of the pelvis. Priapism was present. The external urethral meatus was slightly inflamed. On rectal examination a hard spherical tumour the size of a golf ball was found in the region of the prostate, occupying the greater part of the pelvis, with a distended bladder antero-superiorly. A provisional diagnosis of sarcoma of the prostate was made. The examining finger was blood-stained on withdrawal. Urinary examination showed a faint trace of albumin but no other abnormality. The bladder was slowly decompressed, and the following day a cystogram revealed a large bladder of good shape except for a "flattening" in the region of the trigone. On Nov. 27 intravenous pyelography did not disclose any renal or ureteral abnormality, and a skiagram of the chest was normal. The blood urea was 66 mg. per 100 ml.

The child's condition was poor from the time of admission. During the first week his temperature gradually rose to 104.8° F. (40.45° C.), his pulse to 160, and his respirations to 30. Operation was not considered feasible. On Nov. 30 his blood count was: red cells, 4,800,000 per c.mm.; haemoglobin, 47%; white cells, 21,800 (lymphocytes, 37%; monocytes, 9%; polymorphs, 54%). After decompression of the bladder he began to pass urine normally, but on Dec. 3 feeding difficulties began, and despite various changes in diet and intragastric drips the child died on Dec. 15.

Pathological findings at necropsy were limited to the urinary system. There was no evidence of metastases. The bladder was hypertrophied but small and empty. Its mucosa was congested but intact, and the ureteral and urethral lumina were freely patent. The whole organ was pushed up into the abdomen by a growth the size of a golf ball in the right lobe of the prostate. The growth appeared encapsulated and had not invaded the bladder or rectum, with which it was in contact. Hydronephrosis and hydro-ureter were absent.

Histological examination showed that the mass of growth in the prostatic region attained a diameter of 5 cm. and consisted of uniformly solid white tissue. Microscopical examination revealed cellular sarcoma consisting of large, irregular, elongated cells, the more mature of which were eosinophilic and showed distinct cross-striations in places.

Discussion

All reported cases of rhabdomyosarcoma of the bladder and prostate have been fatal within 13 months, the average being 6½ months after the onset of symptoms. It is interesting to note that in neither of the above cases were metastases found at necropsy, despite the fact that Case I survived 11 months after the onset of symptoms. Previously reported cases also witness that metastases are uncommon, and that the usual cause of death is ascending urinary infection.

The treatment of choice would seem to be total cystectomy and prostatectomy provided that infection is controlled. Khoury and Speer (1944) carried this out; but, unfortunately, ascending urinary infection after the ureterosigmoidostomy of the second ureter resulted in their patient's death 2½ months after the operation. The priapism in Case II was presumably due to irritation of the nervi erigentes, as there was no oedema or cyanosis to suggest obstruction in the prostatic venous plexus caused by the expanding growth.

Summary

One case each of rhabdomyosarcoma of the urinary bladder and of rhabdomyosarcoma of prostate are reported.

There were no metastases.

Eight ounces of growth from Case I and the internal urinary organs from Case II have been presented to the Royal College of Surgeons.

I wish to thank Mr. E. C. Bowden and Mr. J. G. Reid for permission to publish these cases, and Prof. R. A. Willis, of the Royal College of Surgeons, for the histological reports.

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Medical Memoranda

Pure Anti-E Agglutinin in the Serum of an Rh-negative Woman

The following case is worthy of record on account of its extreme rarity. The occurrence of the agglutinin anti-E in Rh-negative women has always been complicated by coincident anti-D, in either its complete or its incomplete form, owing to the stronger affinity of the D antigen. A pure anti-E serum has been obtained in an Rh-positive woman CDe/cde—husband cDE/cde (Race, 1946). The following is believed to be the first reported instance of pure anti-E in an Rh-negative woman.

Case Notes

Mrs. A., aged 26, blood group O, Rh group rr cde/cde. Husband's blood group O, Rhesus group R″r cdE/cde. She had had no previous pregnancies, miscarriages, blood transfusion, or injections of serum or blood at any time. Last menstrual period, March 29, 1946; expected date of delivery, Jan. 5, 1947. She was admitted to hospital on Jan. 17 because of post-maturity.

Surgical induction (Drew-Smythe, catheter) was performed on Jan. 20, after medical induction by stilboestrol had failed. The foetal heart was last heard on Jan. 20. On the 22nd a stillborn male child weighing 9 lb. 4 oz. (4.2 kg.) was delivered after labour lasting 35 hours 15 minutes. The liquor was recorded as thick but not yellow. The skin, however, appeared slightly yellow and the umbilical cord tissue was definitely jaundiced. The placenta was large, greasy, and granular, in keeping with the post-maturity. A specimen of cord blood showed blood group O, Rh group R″r; the cells also gave a strong reaction with the mother's serum. The maternal serum reacted against R_2 cells and R″ cells, but gave negative results with R_0 and R_1 cells. The titre of the anti-E agglutinin was 1 in 8 with R_2r and R_2R_2 cells.

At necropsy (Dr. Cant) the only pathological findings were the changes due to asphyxia caused by intrauterine inhalation of mucus.

Comment

In addition to the production of anti-E agglutinin the actual process of iso-immunization to such a definite extent is unusual for a first pregnancy, particularly with the antigen E. Levine (1945) has shown that erythroblastosis in a first child is usually due to previous immunization by blood transfusion. Although erythroblastosis has not been implicated as a contributory cause of death, it is strongly felt that, had a living child been born, it would probably have shown the signs of erythroblastosis.

I am indebted to Dr. V. M. Cross for permission to record this case. I should like to thank Dr. Sewart for providing the case notes, and Dr. A. E. Mourant and Dr. R. R. Race for confirming the serological findings.

Regional Blood Transfusion Centre, Birmingham. DAVID S. DICK, M.B., Ch.B.

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Reviews

ELECTROCARDIOGRAPHY

Klinische Electrokardiographie. (Ein Lehrbuch für Ärzte und Studierende). By Max Holzmann. (Pp. 624, with 280 illustrations and 2 coloured plates. 55 francs.) Zurich: Fretz and Wasmuth Verlag.

This important book, which was written during the later war years and published in 1945, deserves high praise. Though many textbooks of electrocardiography are available, their contents are too often merely a catalogue of electrocardiographic appearances, and seldom is any attempt made to correlate these with the facts of cardiac anatomy and pathology. This book is a welcome change.

After a brief historical survey and a short description of the apparatus available the author discusses the physiological and anatomical principles underlying the production of the normal electrocardiogram. He clearly correlates the limb-lead electrocardiogram with the vectorcardiogram and then describes fully but in simple terms the rationale of the chest and oesophageal leads. Dr. Holzmann prefers to use the Wilson common electrode for the chest leads rather than the right arm (commonly used in Great Britain) or the left leg (U.S.A.). His account of vectorcardiography and the resolution of the potential vector (within Einthoven's triangle) is particularly well presented, as would be expected from one who has himself done fundamental work on this aspect of the subject. This method forms the only reasonable basis for an intelligent understanding of electrocardiographic appearances, both normal and abnormal. After considering variations of the normal according to body build, age, disposition of the heart within the thorax, and so on, he discusses abnormalities of conduction, heart block, and bundle-branch block. Unfortunately he is apparently unfamiliar with A. M. Master's *The Electrocardiogram and X-ray Configuration of the Heart*, for this reference does not appear among those quoted at the end of the appropriate section, though indeed this is perhaps the only reference of any importance which is not mentioned there. He continues his account of vectorcardiographic analysis in the sections on bundle-branch block and pathological ventricular hypertrophy; it is especially helpful to the consideration of cardiac infarction. In the later parts of the book he describes disorders of rhythm, including extrasystoles, auricular flutter and fibrillation, and A.-V. block. The text is clearly written throughout and the order of the sections is logical and consequential.

The book is well produced, but, as is so often the case with Continental publications, too lightly bound for use as a textbook or for reference. The references at the end of each section are not too numerous for the inquiring student and are, with few important omissions, in all cases to "key" papers on the subject under discussion. They reflect the depth of Dr. Holzmann's learning and reading in German, English, and French. The index is adequate. The 280 illustrations portray clearly the conditions under consideration. We highly recommend the book to all who wish to study electrocardiography. We hope that an English translation will be made soon.

DOUGLAS ROBERTSON.

PNEUMOCOCCUS TYPES

Serological Studies on the Pneumococci. By Erna Mörch. Translated from the Danish by Hans Andersen, M.D. (Pp. 193. 10s.) Copenhagen: Einar Munksgaard. London: Geoffrey Cumberlege (Oxford University Press). 1943.

The success of the sulphonamides in the treatment of pneumonia has led, among clinicians and clinical pathologists, to a loss of interest in the type determination of pneumococci and in the use of specific anti-pneumococcal therapeutic sera. The antigenic structure of these organisms still continues to be of academic interest, however, and it is probable that this knowledge will be required for epidemiological studies of pneumonia in children and other special groups of the population.

We therefore welcome this monograph on the pneumococci, whose scope corresponds in general with that of Kauffmann's monograph on the *Salmonella* group. Though the volume contains much useful information on the properties of and methods of studying pneumococci, on the formation and occurrence of pneumococcal antibodies, and on the frequency distribution of the different types of pneumococci in pathological material, bacteriologists will appreciate particularly the author's having drawn up an antigenic schema in which the types of pneumococci are grouped, numbered, and sub-lettered. Cooper and her colleagues in the United States of America were responsible for defining 32 types, Kauffmann, Mörch, and Schmith in Denmark 20 types, and now Mörch had added a further 18 types. Two of Cooper's types were found to be identical with other members of her series, so that the total known types now amount to sixty-eight. These are numbered from 1 to 42, the rest being lettered. Thus there are two types numbered 6 (6A and 6B), four numbered 7 (7, 7A, 7B, and 7C), four numbered 9 (9A, 9L, 9N, and 9V), and so on. Each type is given an antigenic formula. The number of antigens in each type varies from one to six. For example, the antigenic formulae of some of the types are as follows: Type 1: 1a; Type 6A: 6a, 6b; Type 6B: 6a, 6c; Type 7C: 7a, 7d, 7f, 7g, 7h; Type 42: 42a, 20b, 29c, 33g, 35c, 35d. From these formulae it can be seen whether crossing is likely to occur between different types when tested by agglutination. Finally the author describes each type and gives evidence to prove its right to specific recognition. More types of pneumococci may be recognized in future; if so, it should not be difficult to fit them into the present framework.

G. S. WILSON.

TEXTBOOK OF EMBRYOLOGY

Human Embryology. By Bradley M. Patten, Professor of Anatomy in the University of Michigan Medical School. (Pp. 776; 1,366 illustrations, 53 in colour. 45s.) London: J. and A. Churchill Ltd. 1946.

Descriptive embryology still occupies the greater part of most textbooks of human embryology, with certain notable exceptions, of which this book is not one. The wide fields of embryological research opened up in the last few decades—especially that of developmental mechanics—usually receive little attention, presumably because such work, though it affords a wider view of the nature of human developmental processes, has been done mainly on non-human forms. Inclusion of the principal results of this work would have greatly added to the value of the book. Moreover, we should like to find the postnatal developmental processes discussed within a single volume as a continuation of the antenatal phases.

This textbook for medical students, though bulky, is of restricted scope; it is noteworthy for the clearness of its illustrations, most of them either new or redrawn. Prof. Patten surveys the sexual cycle and earliest developmental stages with reference to recent work both in man and in related forms, and he draws attention to a few of the measurements which have been made on growth changes; but the accounts and figures of chromosomes and mitosis are out of date and inaccurate. He tries to provide elementary answers to some of the questions so often asked on such subjects as the "safe period," superfœtation, and the origin of "congenital" abnormalities. We should have liked to see fuller statements on these matters and some reference to related topics such as freemartins and intersex conditions. He almost completely ignores the problems of developmental mechanics and the results obtained from experimental embryology; we find no mention of metaplasia—the progressive modification of cell potentialities—of dependent differentiation, of mosaic patterns, or of induction. He does not discuss the manner in which the pattern of peripheral nerve distribution is established, and he leads us to believe that the simple intrasegmental reflex is the basic vertebrate pattern, without mentioning its progressive differentiation from the generalized reflex described by Coghill. It is surprising to find a descriptive account of the cranial nerves that refers almost solely to the adult and seems out of place in a textbook of embryology. The accounts are in any case inaccurate—e.g., the sinocarotid component of the ninth nerve is ignored, while he claims that a cutaneous component is present. The account of bone development is elaborate but leaves obscure the part played by "fibrous" ("wavy") bone. He mentions the use of alizarin dyes for the study of bone growth, but does not show how it elucidates the remodelling of bones. Again, it is

incorrect to describe cartilage as avascular until ossification is impending; there is no mention of the vascular "cartilage canals."

It is to be regretted that he gives no guidance to certain much discussed questions—for instance, the relation of heredity to environment, the so-called "recapitulation," and human hybridization. Current views on such problems are intimately connected with our knowledge of developmental mechanisms, and they should be expounded in a student's textbook. The author treats his subject unevenly, some parts being so full as to be suited only to the teacher while others are presented in so popular a fashion as to be less suited to medical students than to the laity. The long bibliography containing some thousand references omits some of the newer contributions (e.g., by Needham) in favour of older ones. There is no guidance for the student on how to read selectively nor is he shown how the text is related to the references.

If we have stressed the omissions in this book it is because they will disappoint the senior student, while the junior will not find the guidance that he requires. In contrast, however, the descriptions of organogeny, which have constituted so much of the conventional field of embryology in the past, are well set out and made clear with the aid of excellent pictures. As a work of reference this book will be useful on the shelves of every anatomical library.

ARTHUR B. APPLETON.

TORULOSIS

Human Torulosis (A Clinical, Pathological and Microbiological Study, with a report of thirteen cases). By Leonard B. Cox, M.D., M.R.C.P., F.R.A.C.P., and Jean C. Tolhurst, M.Sc. (Pp. 149; 67 figures. 25s.) Melbourne: Melbourne University Press, 1946. London: Geoffrey Cumberlege (Oxford University Press)

Torulosis, although widely distributed, is believed to be uncommon in all countries, but its rarity is difficult to estimate because accounts of many diagnosed cases have not been published, and, presumably, many more cases not correctly diagnosed are included in the returns of tuberculosis and similar diseases. The greatest number of cases have been reported in the U.S.A., but the highest incidence of the disease in proportion to population appears in Australia.

This admirable work is the latest and most comprehensive monograph on torulosis. The authors present, among other features, a valuable historical record of the disease, followed by a detailed clinical and pathological study of thirteen hitherto unpublished records of Australian cases, and a clinical analysis of the disease in relation to particular systems and organs, with differential diagnosis. They clearly describe the pathology and morbid histology in man and in experimentally infected animals, and include 67 excellent photographs. Although any tissue or organ may be involved, torulosis affects chiefly the central nervous system and its meninges and the lung; it may simulate intracranial tuberculosis, neoplasm, or abscess; and a particular form may be almost indistinguishable from Hodgkin's disease. The diagnosis, therefore, necessarily depends on the mycological examination, a subject to which the authors have given particular attention. They describe the characters and identification of the causative fungus, *Torula histolytica* Stoddard Cutler 1916 (*Cryptococcus neoformans* (Sanfelice 1895) Vuillemin 1901), and, in an illuminating discussion on the mode of infection in torulosis, conclude that *T. histolytica* probably gains entry through the lung and is dispersed by way of the blood stream. Treatment of the intracranial infection is disappointing and the disease is almost inevitably fatal. A bibliography of 134 titles and an adequate index complete this work, which will prove valuable to mycologists and to all practitioners of medicine, especially those who have not yet learned to appreciate the importance of the grave systemic mycoses.

J. T. DUNCAN.

A third edition of *Dental Materia Medica, Pharmacology and Therapeutics*, by Prof. WALTER J. DILLING and Mr. SAMUEL HALLAM, has been published by Cassell and Co., at 13s. 6d. The arrangement of this manual is as before, but new accounts are given of a number of drugs, and the text has been revised to keep pace with recent advances, both scientific and clinical. The names of the drugs are those officially adopted by the British Pharmacopoeia Commission, but well-known proprietary names are quoted as synonyms.

BOOKS RECEIVED

[Review is not precluded by notice here of books recently received]

Mongolism and Cretinism. By Clemens E. Benda, M.D. (Pp. 310. 25s.) London: William Heinemann. 1947.

A study of mongolism as a pituitary dysfunction and an account of cretinism.

Psychology of Women, Vol. II, Motherhood. By Helene Deutsch, M.D. (Pp. 439. 25s.) London: Research Books. 1947.

A psycho-analytical interpretation of motherhood.

Essentials of Syphilology. By Rudolph H. Kampmeier, A.B., M.D. 2nd ed. (Pp. 465. 25s.) Oxford: Blackwell Scientific Publications. 1946.

A textbook on syphilis for the medical practitioner, with many illustrations.

Diagnostik der Kinderkrankheiten. By Prof. Dr. E. Feer. 5th ed. (Pp. 428. 32s.) Vienna: Springer-Verlag. London: H. K. Lewis. 1947.

The differential diagnosis of children's diseases for students and practitioners; many illustrations.

The Psycho-Analytical Approach to Juvenile Delinquency. By Kate Friedlander, M.D., D.P.M. (Pp. 296. 18s.) London: Kegan Paul, Trench, Trubner and Co. 1947.

Discusses juvenile delinquency, its background and treatment, the training of field workers, and prevention.

Applications of Germicidal Erythemal and Infrared Energy. By Matthew Luckiesh, D.Sc., D.E. (Pp. 463. 30s.) New York: D. Van Nostrand Company. 1946.

Discusses the use of radiant energy for disinfection, its artificial production, and its effect on the human body, textiles, and plants.

A Textbook of Gynaecology. By James Young, *D.S.O.*, M.D., F.R.C.S.Ed., F.R.C.O.G. 7th ed. revised. (Pp. 471. 30s.) London: Adam and Charles Black. 1947.

Incorporates recent advances in endocrinology and new material on ovarian tumours; 17 new illustrations.

Handbook of Preventive Medicine. By the Air Ministry. (Pp. 213. 7s. 6d.) London: His Majesty's Stationery Office. 1947.

Information on hygiene, sanitation, communicable diseases, nutrition, etc., for the R.A.F.

The Road to Maturity. Ed. by Edward F. Griffith, M.R.C.S., L.R.C.P. (Pp. 232. 7s. 6d.) London: Methuen. 1947.

Essays on sex education by various authors.

Tuberculoses Inapparentes. By Prof. Ch. Dejean. (Pp. 191. 250 francs.) Paris: Librairie Maloine. 1946.

An account of atypical or latent tuberculous conditions, their pathology, diagnosis, and treatment.

Eléments de Physiologie Humaine. By Prof. L. Launoy. 2nd ed. (Pp. 760. Paper, 150 francs; bound, 350 francs.) Paris: Librairie Maloine. 1947.

A textbook of human physiology for students.

Chemical Anatomy, Physiology and Pathology of Extracellular Fluid. By James L. Gamble. 5th ed. (7s. 6d.) Harvard University Press. (London: Geoffrey Cumberlege.) 1947.

A summarized lecture syllabus for teaching purposes; with diagrams and references.

The Sanitary Inspector's Handbook. By Henry H. Clay, F.R.San.I., F.I.S.E. 6th ed. (Pp. 545. 22s.) London: H. K. Lewis. 1947.

The methods and apparatus of hygiene and sanitation, with reference to the relevant laws.

Insect Pests. By W. Clunie Harvey, M.D., D.P.H., M.R.San.I., and Harry Hill, F.R.San.I., F.S.I.A., A.M.I.S.E. 2nd ed. (Pp. 347. 14s.) London: H. K. Lewis. 1947.

Two new chapters have been added on mosquitoes and moths and on D.D.T.

Molecules Against Microbes. By E. S. Duthie, M.B., Ph.D. (Pp. 150. 6s.) London: Sigma Books. 1946.

An account of chemotherapeutics and antibiotics for the layman.

BRITISH MEDICAL JOURNAL

LONDON

SATURDAY JULY 19 1947

NEXT WEEK'S A.R.M.

The Representative Body will hold its annual meeting at B.M.A. House on Tuesday next week and succeeding days. Next year the usual peacetime Annual Meeting of the Association will take place in Cambridge. It was at Cambridge that the first normal peacetime meeting was held after the war of 1914–18. The London meeting next week is the last A.R.M. to be held before the appointed day of the National Health Service Act—July 5, 1948. Special Representative Meetings will of course be held before that day. The *Supplements* to the *Journal* of July 12 and 19 contained the resolutions submitted by Divisions and Branches, which have drawn these up in the light of the Annual Report of Council which appeared in the *Supplement* of April 26. Some of these resolutions bear upon the National Health Service Act and many of them upon the usual professional issues that arise out of the year's work of the various committees of the Council.

The present moment might be described as a period of remission in the medico-political fever to which the corporate body of medicine has been subjected during the past two years. That the present quiet phase may disturb many medical men is natural. It is, however, inevitable, because the discussions of the Negotiating Committee and its numerous subcommittees with the Ministry of Health have quite properly taken place in the seclusion of the conference room. No one can have been impressed by the results of the open diplomacy practised on the public platforms of international politics. The dangers are no less in the smaller sphere of medicine. A blaze of publicity sometimes has an unfortunate effect on debaters and encourages them to gain cheap verbal victories instead of talking to the point. The medical profession should therefore, we suggest, have the patience to trust those whom it has appointed to negotiate on its behalf and to wait until the results of its discussions with the Ministry and its final discussion with the Minister have been made public. Democracy, as someone has said, is discussion, and it has often been held that the cardinal political virtue of this country is the ability to arrive at compromise as a result of such discussion. Whether or not the Minister of Health will practise this political virtue when he comes to arbitrate on matters which the profession holds to be fundamental remains to be seen. If we are to achieve what both the medical profession and the Minister desire—namely, the best comprehensive medical service for the people of this country—there must be give and take on both sides. But if there is a clash on fundamental principles the medical profession will not hesitate to stand firm. And the one principle that underlies all others is the right of the individual to preserve his freedom of thought and action in a democracy based upon the Rule of Law and the Sovereignty of Parliament.

Newcastle-upon-Tyne is next week moving that the Negotiating Committee be asked to make an early report of the progress and discussions with the Minister. Without prejudicing the discussion this would seem to us to be a motion which attempts to push wider the already wide-open door. It can be in the interests of no one to withhold a report. Marylebone dots the i's and crosses the t's of the Council's statement on the results of the plebiscite; Bath considers that when a further plebiscite is taken the B.M.A. Council should "give a strong lead to the profession in the light of the findings of the Special Representative Meeting"; Buckinghamshire considers that before any future plebiscite there should be a clear exposition of the Association's policy but that the actual voting paper should be sent under separate cover and unaccompanied by any expression of opinion; Buckinghamshire also moves that the result of a future plebiscite should be binding on the Council. To arrive at decisions by the method of plebiscite is notoriously difficult, especially when the questionary is addressed to matters of opinion. It is difficult enough even when a questionary is restricted to matters of fact, as is well exemplified by the familiar problem facing the man asked to say Yes or No to the question "Have you stopped beating your wife?" Even a questionary worded in the most careful manner possible presents a thorny problem to those who have to base action on the result. The guidance of a statistician is necessary to make it clear whether an apparent majority is a real majority. And if there is a real majority, at what point does it become large enough to convince the minority that they should accept the verdict of their fellow voters? Whatever the results of another plebiscite may be, the Council of the B.M.A. may find itself pressed on by those whose feelings will prompt them to interpret the figures in a way favourable to their own point of view. Whatever the Council may decide, it will court unpopularity with those who wish to decide otherwise. In any event, the Council will have a hard task, and its success in grappling with it will be measured by the degree of objectivity it brings to bear on its examination. Credited with the objective approach it has tried to make to all professional problems and which it will undoubtedly make to those facing the profession in the immediate future, the Council should be able to count upon the trust and loyalty of the members of the Association. Given a sufficient majority—the size possibly stated before the plebiscite—the Council should also be able to count on the loyal support of the minority in the action the majority wish to take.

If we keep our heads cool and our feet warm we shall be able to preserve those essential qualities which distinguish a profession from a trade and also from an applied science. The best minds in medicine are fully conscious of the continuity of medical history and of the fact that each succeeding generation of doctors inherits the best traditions of the past. So long as this continuity is uninterrupted by revolutionary methods forcibly introduced details of service and administration will fit into place.

CHROMATOGRAPHY APPLIED TO MEDICINE

Chromatography is a relatively new technique of qualitative, and to some extent quantitative, chemical analysis. Having already established itself, somewhat belatedly as it appears, in biochemical research, it is now beginning to invade hospital practice. In the words[1] of the President of the Royal Society, it foreshadows "a leap forward in our knowledge of the proteins."

Like many other innovations in technique chromatography began slowly. It was as long ago as 1906 that the Russian botanist Tswett published his first paper[2] on the separation of organic substances by the use of an adsorption technique which was his own invention. Whereas others had been content to shake their adsorbent material with the fluid from which adsorption was to be effected, the procedure followed by Tswett was to allow his solution to flow slowly downwards through a glass tube containing the adsorbent material. Working with the yellow and green pigments of plants, he found that a succession of coloured bands was formed in the adsorbing column, which could be brought out and "developed" by the further passage through the column of the pure solvent. In this way he was able to effect mechanical separation of the pigments under investigation. Unfortunately, however, the bulk of his work was published only in Russian; and partly for this reason, and partly also, no doubt, because the separation and identification of small amounts of naturally occurring substances attracted less attention then than now, little interest was aroused at the time. In fact, twenty-five years were to pass before Kuhn, Winterstein, and Lederer[3 4] effectively revived his method in Germany for the study of carotenoid substances.

Subsequent extensions to Tswett's original technique include its adaptation to colourless substances through such devices as the use of ultra-violet radiation to show up stratification bands on the adsorbent column; "liquid chromatography," in which successive bands are washed or "eluted" through the column by the use of further quantities either of the original solvent or of others; and, finally, two more radically new developments, both of which are due to a research team at the Wool Industries Research Association laboratories at Leeds. It may be mentioned in passing, however, that it was by the use, substantially, of Tswett's adsorption method that Binkley, MacCorquodale, Thayer, and Doisy[5] were able in 1939 to extract pure vitamin K from crude alfalfa, containing less than one part in two thousand of the vitamin, no other method of separation but successive chromatographic adsorptions being employed.

The first of the Leeds innovations consisted in the replacement of the original adsorption column by a column filled with silica powder which had been allowed to absorb water but not to a sufficient extent to become wet in the ordinary sense. As before, a succession of bands is formed in the column as the material under examination passes through it; but the effect is due not to adsorption but to the partition of the various substances between two liquid phases—the original solution, and the silica gel of the particles which make up the column. For this reason the method is known as "partition chromatography."[6] It was developed by Martin and Synge at Leeds for the study of the amino-acids of wool, but among many later uses has had a share in the isolation of pure synthetic penicillins by Du Vigneau and others.[7] This technique has been in turn transformed, for use on a micro-scale, by the substitution of so simple a material as a strip or sheet of filter paper for the silica column. It was of this latter method, which is due to Consden, Gordon, and Martin,[8] that Robinson in the reference already quoted stated: "I gather the chief requirements are a lead tray, an earthenware drainpipe, and a piece of paper." It has proved itself equally well adapted to the requirements of research and of routine measurement and has already been used[9] for such varied purposes as the elucidation of the structure of gramicidin-S by the Leeds team, the routine analysis of penicillin mixtures,[10] and by Dent for the examination of amino-acids in urine.[11 12] Still more lately a first attempt has been made by La Cour and Drew to apply the method in cytology.[13] Its power is shown by the fact that in its original use 0.002 grammes of wool sufficed for the demonstration of all the amino-acids whose presence could be shown by other methods.

In the simple strip method partition is between water and any suitable organic solvent, and the material under examination is separated in a series of bands running transversely across the strip. In the case of the amino-acids ninhydrin has been employed as the colour reagent. Should separation in any case be incomplete, all that is necessary is to repeat the analysis with the use of a sheet instead of a strip of filter paper; and, with a different solvent, to carry through a second separation in a direction at right angles to the first. The various amino-acids then appear like so many rough two-dimensional plots on a sheet of graph paper, and can be physically separated by a pair of scissors.

It is a remarkable fact that, even if no other evidence had been forthcoming, the application of this filter-paper technique would alone have sufficed to demonstrate not only that gramicidin-S is a cyclopeptide—that is, a ring structure composed of successive amino-acids—but also to specify the order in which the different amino-acids concerned appeared in the ring. This was achieved by examination of the partial hydrolysis products, consisting of either two or three amino-acids in combination, and the subsequent breakdown of these di- and tri-peptides into their constituent amino-acids. Filter-paper technique was used at all stages, and each of the five linkages of the cyclic structure directly demonstrated.

Clinically, the method has been used to show abnormalities in the amino-acid content of the urine in cases of subacute hepatic necrosis, Fanconi syndrome, and in late pregnancy. From this it would be a natural next step to study the elimination of amino-acids administered by the

1 *Nature*, 1946, **158**, 815.
2 *Ber. deut. bot. Ges.*, 1906, **24**, 384.
3 Ibid., 1931, **64**, 1349.
4 *Z. physiol. Chem.*, 1931, **197**, 141.
5 *J. biol. Chem.*, 1939, **130**, 219.
6 *Biochem. J.*, 1941, **35**, 1358.
7 *Science*, 1946, **104**, 431.
8 *Biochem. J.*, 1944, **38**, 224.
9 Ibid., 1946, **40**, 43.
10 *Nature*, 1946, **158**, 675.
11 *Biochem. J.*, 1946, **40**, 44.
12 *Lancet*, 1946, **2**, 637.
13 *Nature*, 1947, **159**, 307.

mouth in known amounts, and to compare the patterns obtained from normal patients with those in pathological cases. In principle, therefore, the method would appear to offer the possibility of a diagnostic test of unusual subtlety. Since, in addition, it can be applied to the separation of any substances which have a suitable partition coefficient between water and any organic solvent, the possibilities for clinical research must be considerable.

Although each of the chromatographic methods which have been mentioned is intrinsically capable of medical application, it may be expected that the filter-paper technique will make the widest appeal. Three books covering the whole or part of the subject are available.[14-16] Of these, Bacharach and Robinson's is a translation of the original German classic and contains full references up to 1938, and Williams's with select references up to 1944 is both the most recent and the best fitted to serve as a general introduction.

DFP IN GLAUCOMA

Although war gases are regarded by most people with more abhorrence than guns or bombs they are in fact more readily converted to the uses of peace. Several of the new gases discovered during the war are already proving to be useful tools in the advance of medical knowledge, and a few of them may even become valuable agents of healing. Di*iso*propyl fluorophosphonate, or DFP, is an excellent example of this modern version of swords beaten into ploughshares: the recent work of Leopold and Comroe[17] at Philadelphia suggests that this highly toxic substance may prove to be of great value in the treatment of glaucoma.

The powerful physiological effects of fluorophosphonic esters were first observed by Lange and Kreuger,[18] who prepared the dimethyl and diethyl esters in 1932; indeed, it was the observation by these authors of marked effects upon respiration and the eyes after brief inhalation of the vapour of these esters which led a group of Cambridge workers to re-examine the alkyl fluorophosphonates in the early years of the war. The most conspicuous effect of inhalation of fluorophosphonic esters is a long-lasting miosis, accompanied by spasm of accommodation, and Adrian, Feldberg, and Kilby[19] discovered in 1941 that these eserine-like effects were due to an intense inhibition of cholinesterase. This inhibition was found by Dixon and his colleagues[20] to be, unlike that produced by eserine, progressive and irreversible, an observation which explains the prolonged character of the physiological effects. In 1941 McCombie and Saunders[21] prepared a series of homologous esters, of which the di*iso*propyl ester was found by Adrian and his colleagues to be the most potent.

Aqueous solutions of DFP are not stable, but Leopold and Comroe report that 0.1% solutions in peanut oil retain their potency for several months. In the normal eye instillation of such solutions produces prolonged and intense miosis, spasm of the ciliary muscle, false myopia, and decreased intraocular tension; these effects are equal to or greater than those reported for 1% eserine or 5% "prostigmin." Moreover, 0.2% DFP will overcome the effects of 1% atropine.

In the glaucomatous eye 0.05–0.1% DFP in peanut oil successfully lowers intraocular tension in a higher proportion of patients and with decidedly fewer instillations than either pilocarpine or eserine. Leopold and Comroe found it effective in controlling intraocular tension in 43 of 48 eyes with chronic simple glaucoma, when pilocarpine or eserine was effective in only 21 eyes. Similarly DFP was much more effective than pilocarpine or eserine in eyes in which glaucoma developed after cataract extraction.

Repeated doses of DFP produce a slight decrease in plasma cholinesterase but no systemic symptoms. The drug does, however, have some untoward and undesirable effects —namely, visual blurring, brow and eye ache, spasm of accommodation, and pericorneal injection. These effects are not troublesome in all patients and, in particular, are not prominent in patients with glaucomatous aphakic eyes. In spite of these defects the authors regard DFP as a promising alternative to eserine; it is certainly very effective, and it requires much less frequent application. They were unable to recommend any particular dosage regime; the frequency of application must be determined by repeated checks of the intraocular tension. In their experience administration may be required only once daily, or even once weekly.

The results of Leopold and Comroe have been largely confirmed by McDonald[22] in a series of careful clinical studies and by Lebensohn[23] in a smaller number of patients.

OPERATION FOR CONGENITAL PULMONARY STENOSIS

Surgery has been successfully applied to most of the viscera, but surgery of the heart has been relatively slow to develop. The surgery of congenital heart disease, until recently a sterile field, now offers hope of relief to many sufferers owing to the brilliant work of several surgeons. Maude Abbott, in her classical *Atlas of Congenital Cardiac Disease*, suggests a clinical classification of three groups of cases. In Group 1 she places those cases with no abnormal communication (acyanotic group); a representative of this group is co-arctation of the aorta, which can now be relieved by the brilliant operation of Crafoord's.[24] Group 2 includes cases of arterial-venous shunt with terminal reversal of flow (cyanose tardive); patent ductus arteriosus is representative and its relief by ligation is now almost a standard procedure. Group 3 comprises cases of permanent venous-arterial shunt and retardation of flow (cyanotic group), and surgery can now give relief to patients in this last group.

In 1945 Blalock and Taussig[25] described attempts to relieve certain cases of congenital heart disease in which pulmonary stenosis or pulmonary atresia exists by performing an anastomosis between a systemic artery and the right or left pulmonary artery. The argument behind this operation was that one cause for the cyanosis is the delivery of an inadequate quantity of blood to the lungs. The systemic artery used has been either the innominate or the subclavian or even the carotid. Within two years of the first paper recording 3 cases Prof. Blalock[26] has been able, in the first Edward Churchill lecture, to record his results in operations upon 243 patients; the overall mortality was 21%, though in the second hundred it was only 15%. Blalock considers that in patients between the ages of 7 and 12 years in whom a typical tetralogy of Fallot is present with a small heart the operative risk should be less than

[14] Zechmeister, L. and Cholnoky, L., 1941, *Principles and Practice of Chromatography*, Chapman and Hall, London. Translated by Bacharach and Robinson.
[15] Strain, H. H., 1942, *Chromatographic Adsorption Analysis*, Interscience Publishers, New York.
[16] Williams, T. I., 1946, *An Introduction to Chromatography*, Blackie, London.
[17] *Arch. Ophthal.*, 1946, **36**, 1, 17.
[18] *Ber. dtsch. chem. Ges.*, 1932, **65**, 1598.
[19] *Brit. J. Pharmacol.*, 1947, **2**, 56.
[20] *Nature*, 1946, **158**, 432.
[21] Ibid., 1946, **157**, 287.
[22] *Amer. J. Ophthal.*, 1946, **29**, 1071.
[23] *Arch. Ophthal.*, 1946, **36**, 621.
[24] *J. thorac. Surg.*, 1945, **14**, 347, and annotation, *British Medical Journal*, 1946, **2**, 166.
[25] *J. Amer. med. Ass.*, 1945, **128**, 189.
[26] *Ann. Surg.*, 1947, **125**, 129.

12%. When atypical conditions exist such as a large heart, situs inversus, large aorta, the danger of the operation increases. The age of his patients has ranged from 4 months to 26 years, but the best period is from 3–10 years. The mortality is higher in infants under 2 years, and operation is not advised under 18 months unless the chances of survival to an older age are less than 50%. In older patients it is more difficult to bridge the gap to the pulmonary artery with the systemic artery, and the structures are less elastic and pliable. It is significant of the gravity of the condition that 20 patients have died while awaiting admission to hospital.

In 147 patients in whom the subclavian artery was used the mortality was 9%; in 57 in whom the carotid or innominate was used the mortality was 33%. Blalock now feels that the extra size of the innominate artery is probably rarely necessary to secure the highest rise in oxygen saturation, as it is probably more than balanced by the extra strain on the heart. The much higher mortality would certainly appear to be pertinent. Blalock's intermediate papers[27 28] should also be consulted for valuable information. The results of the operation have been, in general, very gratifying. Cyanosis is relieved almost at once; the arterial oxygen saturation may improve from 30% to 80%; children who could walk only a few feet before operation are enabled to walk a mile or more and some can engage in fairly strenuous exercise.

The Blalock-Taussig operation is ingeniously conceived and has given great relief to many patients, but it is still too early to assess the results fully, for the operation, by creating an artificial ductus arteriosus, exposes the patient to the later risks of cardiac failure or infective endocarditis. As the authors themselves say, however, it is better to run these risks in later years than to suffer and die from anoxaemia and cyanosis in the present. Recently Potts, Smith, and Gibbons[29] have described a method of direct anastomosis of the aorta to the pulmonary artery as an alternative to Blalock's operation.

The surgical treatment of congenital pulmonary stenosis is to be discussed at the International Congress of Surgery in London in September and the opener will be Prof. Blalock.

HIGH-VOLTAGE X RAYS

In a recent leading article[30] on the generation and properties of high-voltage *x* rays, we suggested as the next step that equipment similar to the 30 million-volt synchrotron, now approaching completion at the Telecommunications Research Establishment of the Ministry of Supply, should be given therapeutic trial at a limited number of centres. This view has now been endorsed by the decision of the Medical Research Council to order two further such synchrotrons for medical use. They have been allocated to Cambridge and the Royal Cancer Hospital, where Prof. J. S. Mitchell and Prof. W. V. Mayneord respectively can be relied upon to secure the fullest information from them. Apart from the obvious, and indeed dramatic, interest of an approximately tenfold increase in *x*-ray voltages, a thorough examination of both physical and therapeutic effects is needed for future policy. No changes in methods of generation can render such data obsolete, for the physical properties of *x* rays are determined by voltage alone; and, even with existing methods, it is probable that appreciably higher voltages could be produced. It may therefore be necessary to decide how far up in voltage it is worth while to go. The immediate prospect is for a depth dosage at five centimetres equal to about four times that at the surface.

ACQUIRED RESISTANCE TO PENICILLIN

One of the chief reasons why penicillin treatment should be aided so far as possible by laboratory control is that susceptibility to penicillin varies not only among bacterial species but sometimes among strains of the same species. When abnormal resistance is exhibited by an individual strain, it may be either natural or acquired by habituation. The capacity of different strains to develop resistance by habituation varies. Very fortunately, resistant strains of Group A *Str. pyogenes* are never encountered, nor can this organism be induced by the usual proceedings to develop anything more than a slight increase of resistance *in vitro*. *Staph. aureus* goes to the other extreme: resistant strains are being encountered with apparently increasing frequency, and *in vitro* resistance can be artificially increased by as much as 5,000-fold. The peculiar interest of the behaviour of staphylococci is that resistance developed *in vivo* and *in vitro* differs in nature; the former is unaccompanied by any change in cultural characters, is permanent, and is due to the production of penicillinase; while the latter is accompanied by a change in colony type, is rapidly lost on transfer to normal media, and is not due to penicillinase formation. Why two evidently different mechanisms should operate under different conditions to produce a similar effect is still unexplained. It is also by no means certain whether the underlying process is one of selection or adaptation. K. R. Eriksen[1] takes the former view, basing it on the proportion of abnormal colonies found on plating broth cultures undergoing habituation or subsequent to the release from the influence of penicillin. He also observed actual stimulation by penicillin of the growth of a resistant strain, which recalls J. Ungar and P. Muggleton's[2] finding that penicillin in concentrations of 1 or 5 units per ml. stimulates the growth of tubercle bacilli. E. P. Abraham, D. Callow, and K. Gilliver,[3] on the other hand, take the view that modification and not selection is the basis of acquired resistance to antibiotics in general: they employed three, none of which was actually penicillin, and found that after habituation to one of them *Staph. aureus* adapted itself in the same way to another, which is not to be expected if the former process eliminated all but the descendants of a few originally resistant cells. F. H. Stewart,[4] working with sulphonamides and *Shig. flexneri*, also concludes that adaptation accounts for acquired resistance to these drugs.

Of much more practical importance is the mode of origin of resistant strains found in patients. E. A. North and R. Christie[5] have studied this question intensively in the ward of a plastic surgery unit where many resistant strains of *Staph. aureus* were encountered. Regular specimens were taken, and all coagulase-positive strains subjected to biochemical and serological examination as well as tests for susceptibility to penicillin. An interesting fact is that resistant strains appeared mainly in wounds of such a nature that treatment with penicillin was unlikely to be fully effective. These authors give reasons for rejecting the very plausible hypothesis that the appearance of resistant strains was due to cross-infection, nor do they believe that selection accounted for it. Reasons for the latter view are that resistant strains were never encountered before treatment, and that a mixture of sensitive and resistant colonies was never obtained. They incline, there-

[27] *Bull. N.Y. Acad. Med.*, 1946, **22**, 57.
[28] *Ann. Surg.*, 1946, **124**, 879.
[29] *J. Amer. med. Ass.*, 1946, **132**, 627.
[30] *British Medical Journal*, 1947, **1**, 571.

[1] *Acta path. microbiol. scand.*, 1946, **23**, 284.
[2] *J. Path. Bact.*, 1946, **58**, 501.
[3] *Nature*, 1946, Dec. 7, 818.
[4] *J. Hyg.*, 1947, **45**, 28.
[5] *Med. J. Australia*, 1946, **2**, 43.

fore, to the adaptation hypothesis, suggesting that "the stimulation by penicillin to change potential penicillinase-producing staphylococci into actual penicillinase-producing variants offers the most satisfactory explanation."

The organism which has been most anxiously watched from this point of view is the gonococcus, and so far no unequivocal evidence that it can become seriously penicillin-resistant has yet been forthcoming. It is therefore somewhat alarming to read that C. Huriez and M. Desurmont,[6] of Lille, believe they have observed the "beginnings of penicillin-resistance" in gonorrhoea. Since the "liberalization" of penicillin (to what degree of freedom of use this refers is not clear) the number of cases coming to their clinic has diminished, and there have been patients requiring very large doses—as much as 4,400,000 units in all—together with sulphonamide treatment and artificial fever, before cure was effected. This is certainly a tendency which, if verified and maintained, will call for rigorous measures of control.

BLINDNESS IN SCOTLAND

A statistical survey of 3,219 blind persons in Glasgow and south-west Scotland was undertaken in 1942 by Marshall and Seiler.[7] Dickson[8] has now studied 4,078 certified cases in other parts of Scotland. The sexes were equally represented in the records studied by Dickson, and the group aged 65 or over contributed the largest number of cases—1,612; the age group 50–64 came next with 1,307. In the 40–49 group there were 443 cases, and there were progressively fewer in the younger groups. Thus there were only 33 cases in the age group 1–4, and none under 1 year. The causes of blindness were: cataract in 17.3% of the patients, myopia (13.8%), venereal disease (12.8%), chronic septicaemia (10.9%), glaucoma (7.6%), and injury (4.0%).

The individual causes of blindness varied in the different age groups. Where the onset of blindness was in the pre-school period (0–4 years) Dickson found that congenital anomalies and ophthalmia neonatorum were together responsible for 62.8% of the total of 366 cases; congenital syphilis was the cause in only 8.4% of these cases. With onset in the school period (5–15 years), however, the commonest cause of blindness was congenital syphilis, accounting for 22.6%; congenital anomalies and abiotrophies came next and were responsible for 19%. The causes of blindness with onset in the adolescent period (16–29 years) were: congenital anomalies (20%), congenital syphilis (13.2%), chronic septicaemia (12.2%), trauma (11.7%), and myopia (11%). Onset during the working period (30–49 years) followed myopia in 16.7% of cases. Other causes were chronic septicaemia (15.1%), abiotrophies (9.2%), acquired (8.1%) and congenital (7.4%) syphilis, and trauma (7.1%), including sympathetic ophthalmia. Over the age of 50 cataract (29.1%) was the most usual cause, and then myopia (16.3%), glaucoma (12%), chronic septicaemia (10.5%), and vascular diseases (6.6%).

On the basis of actual duration of blindness in "patient years" the more important causes were a miscellaneous group. Chronic septicaemia came first with 12.3% of all the "patient years" of blindness; congenital syphilis, congenital anomalies, and ophthalmia neonatorum were almost as significant. Next in importance were injury and myopia, and then cataract, local infections, and abiotrophy. Glaucoma, acquired syphilis, and phlyctenular disease were each the cause of about 3% of the total of "patient years" of blindness. In about 13% of the cases some improvement by treatment seemed likely. But the regional survey indicated that, for example, in the Inverness and Zetland regions the importance of cataract as a cause of blindness was at least partly due to lack of facilities for operative treatment in the sparsely populated country areas. In Dundee myopia was particularly common, while in Aberdeen retinitis pigmentosa was relatively prevalent.

Dickson's report agrees closely with that of Marshall and Seiler, and he gives consolidated tables for the two investigations. The causes of blindness in Scotland are not dissimilar from the causes observed in England and Wales as recorded by Sorsby,[9] except that the Scottish figures show a distinctly greater incidence of infections. These differences may be adventitious, owing to individual and local variations in registration, but Dickson's plea for more precise statistics is sound. There is much to be said for his advocacy of annual publication of authoritative statistics of blindness.

HUMAN NUTRITION LABORATORY AT OXFORD

The Trustees of the Will of the late Sir Henry Wellcome have offered Oxford University up to £25,000 to buy suitable premises for a Wellcome Laboratory of Human Nutrition. This handsome gift of money will also be used to alter and equip the premises adequately as a centre for fundamental research on human nutrition. The Wellcome Trustees have made this gift on condition that the University will provide an annual sum of £5,000 for the maintenance of the laboratory for a period of at least five years from the date that it becomes available for occupation. Another proviso is that if the laboratory ceases to be used for its initial purpose the house and its equipment, or its realized value, will be applied by the University for research "within the wide range of the sciences contributory to medicine and to the physical well-being of men and animals." The University has gratefully accepted the gift and has decreed that such a laboratory shall be instituted for the conduct of fundamental research into the problems of human nutrition which have their origin in physiology, biochemistry, pathology, anthropology, or clinical science. Field research may be undertaken either in this country or abroad. The management of the laboratory will be in the hands of a standing committee of two members appointed by the Board of the Faculty of Medicine, two appointed by the Board of the Faculty of Biological Sciences, and the Reader in Human Nutrition, who will act as secretary of the committee. The committee may decide to transfer to the laboratory some of the apparatus and equipment formerly belonging to the Oxford Nutrition Survey. This handsome gift of the Wellcome Trustees will enable Oxford to follow the example already set by Cambridge.

THE HALF-YEARLY INDEXES

The half-yearly indexes to Vol. II of the *Journal* and the *Supplement* for 1946 have been printed. They will, however, not be issued with all copies of the *Journal* but only to those readers who ask for them. Any member or subscriber who wishes to have one or both of the indexes post free, should send a postcard to the Accountant, B.M.A. House, Tavistock Square, London, W.C.1. Those wishing to receive the indexes regularly should intimate this.

On July 10 Sir Alfred Webb-Johnson, Bt., was re-elected President of the Royal College of Surgeons of England for the seventh successive year. This is a record. Lord Moynihan held the office for six years from 1926 to 1931 and Sir William MacCormac for five years from 1896 to 1900.

[6] *Presse méd.*, 1947, **2**, 13.
[7] *Brit. J. Ophthal.*, 1942, **26**, 337.
[8] Ibid., 1946, **30**, 381.
[9] *British Medical Journal*, 1945, **2**, 557.

TUBERCULOSIS AND THE HEALTH ACT

MR. ANEURIN BEVAN AT ANTI-TUBERCULOSIS CONFERENCE

A Commonwealth and Empire Health and Tuberculosis Conference, arranged by the National Association for the Prevention of Tuberculosis, was held in London from July 8 to 10. It was attended by delegates from over thirty Dominions and Colonies and nearly twenty foreign countries. Government departments, local authorities, voluntary organizations, and industrial and commercial concerns were represented, the last-named not only by their medical and welfare officers, but by their executives, personnel managers, and trade union officials. Sir Robert Young was chairman of the Conference, and the Duchess of Kent, president of the National Association, welcomed the members.

Mr. Aneurin Bevan, Minister of Health, attended a session at which the discussion was on the National Health Service Act and its effect on tuberculosis work. He said that after a setback during the earlier part of the war the tuberculosis mortality rate was again declining, and although notifications were increasing in number this was due only to the greater accuracy in diagnosis and to earlier discovery. Mr. Bevan went on to say that he had inherited "a very considerable apparatus" in the shape of sanatoriums and specialist staff. "I do not propose so much to change what exists as to continue, amplify, and improve it."

Not a "Soulless Affair"

There were sceptics who talked as if the health service of the future was going to be a centralized, State-run, soulless affair in which human personality would not be able to find expression. That was the very opposite of what was proposed. He wanted each sanatorium to maintain its identity and continue to be run under its separate name. Although the sanatoriums and dispensaries would be made an integrated part of the health service as a whole, the institutions would be maintained on as independent and voluntary a basis as possible.

> "In this health service we are making a big experiment which, if it succeeds, is going to be very important indeed, not only in this field but in many others. We are placing upon the Government the obligation of providing a health service, which at first gives rise to the impression of centralization; but although the Minister will be responsible, the service will be worked through Regional Boards and Management Committees of hospitals, which will be voluntary and as far as possible independent bodies."

Some of the Regional Boards had already held their first meetings, and it was gratifying to find so large a body of experienced and zealous people ready to take on this great work at this moment. Mr. Bevan was fully alive to the fact that once the administration started there would arise a chorus of criticism, a cataract of complaints, and people would say, "There you are! It is all going wrong." Actually the complaints had always been felt, but only now would they become vocal. The administration of the Act gave the complainers a means of articulation. The Minister would have to face a barrage of questions in the House of Commons. "That is excellent. That is how a democratic constitution works. And if the Minister is kicked hard enough he passes the kicks on, and the whole service is energized."

The Minister would be sharing with voluntary bodies (Mr. Bevan continued) the responsibility for day-to-day administration. In this experiment of centralized responsibility and decentralized administration a new chapter was opened in the constitution of Britain. Some seemed to think that it would make a dichotomy in the service, whereby the Ministry would be responsible for diagnosis and institutional treatment and the local authority for after-care. "I do not see that that schism actually threatens, because we hope that tuberculosis officers will hold joint appointments with the local health authority. We shall make the link where it is important to make it—at the executive point where the actual work is done."

Next year, on July 5, there would come into operation the National Insurance Act, the Health Act, and—if Parliament passed it (and there was no reason why it should not)—an Act to complete the break-up of the Poor Law system. In three big steps the social services of this country would have been revolutionized. The Health Act was not merely a contract which the Government made with the citizen; it was a living and developing service, improving with the expansion of knowledge and resources. With the operation of the Health Act, the development of social services generally, the provision of roomy and well-planned houses, and attention to child nutrition, he looked forward to the conquest of tuberculosis.

"A Fatal Cleavage"

Dr. Norman Tattersall, the principal medical officer of the Welsh National Memorial Association, said that the tuberculosis service in Great Britain was operated by 200 scheme-making authorities, with the result that the standard of achievement varied enormously. Under the new Act institutional provision and the control of the tuberculosis medical staff operated at regional level, but prevention and after-care were left in the hands of the local health authorities. Surely the obvious result would be that those features which came under the control of the Regional Board would reach a certain level of achievement throughout the whole region, but the vital preventive and after-care services would vary according to the vision, energy, wealth, and knowledge of the local authorities.

In most of the small schemes which would now be fused into the regional pattern there was no serious divorce between the preventive and the treatment aspects; it would appear, therefore, that regionalization would ultimately improve their diagnostic and treatment set-up. But would it not also bring about a fatal cleavage—(Mr. Bevan shook his head)—between prevention and treatment? The Minister had just told them that the problem was to be met in some measure by "loaning" the tuberculosis officer to the local authority, so that he would be the servant of two masters—the local authority and the Regional Board—and there was biblical authority for predicting the failure of such an arrangement.

Another defect which Dr. Tattersall pointed out was that while the tuberculosis officer would be in charge of chest clinics attached to the hospitals of the new service he would have no responsibility for cases of non-pulmonary tuberculosis, which would be dealt with by the appropriate departments of the hospital. Surely this meant that the unity of tuberculosis as a disease would be obscured. Admittedly the treatment of particular phases of the infection must be the province of special departments, but in whatever part of the body the main lesion was situated tuberculosis was still an infectious disease combined with a social problem. Of course, the orthopaedic surgeon must advise and direct the treatment of his cases, but if they ceased to be the interest also of the tuberculosis officer it would mean a reversal of the principle which had guided the development of the service ever since Sir Robert Philip opened his first dispensary in 1887.

Dr. Tattersall also asked whether each Regional Board would be left free to develop the service in its area on widely different lines from its neighbours; or would there be such central direction as would ensure a fairly uniform pattern?

"The success or failure of the revolutionary changes which lie ahead will depend in no small measure on the Regulations with which the Minister will clothe the bare bones of the Act. Let him remember St. Paul's advice: 'Prove all things; hold fast that which is good.'"

The discussion was continued by Dr. Brice Richard Clarke, director of the Northern Ireland Tuberculosis Authority, who said that he believed the Act would mean a great advance in diagnosis and treatment, but while they could not expect an Act of Parliament to be as alluring as a company prospectus they would have welcomed indications of a more definite national campaign against tuberculosis. If there was a feeling that enough was being done at present, such complacency was not shared by other countries—Holland, for example. Councillor G. P. Achurch, chairman of the Birmingham Tuberculosis Committee, said that in his city they believed that sanatorium treatment detached from rehabilitation and re-employment was largely ineffectual or at any rate wasteful of effort.

Mr. Bevan could not remain for the whole of the discussion, but before leaving he said that a good deal of misunderstanding

which he had detected in particular in Dr. Tattersall's speech and in the speech of a Glasgow delegate was due to the fact that the Act was merely a sketch. For anything the speakers knew, their criticisms had already been anticipated.

Tuberculosis in the Commonwealth

Two sessions of the Conference were devoted to reports from the Dominion and Colonial representatives. The secretary of the Canadian Tuberculosis Association, Dr. G. J. Wherrett, described the sanatorium and tuberculosis hospital provision in Canada (one bed per 1,000 population) and said that treatment was free for all in five of the nine provinces and in others not more than 10% of the patients had to pay. B.C.G. vaccine was first used in Canada in 1928 in the vaccination of newborn babies from tuberculous households in Montreal. The results of B.C.G. were shown in a significant reduction in the morbidity and mortality in the vaccinated as compared with the unvaccinated groups. Dr. F. J. Wiles (Union of South Africa) said that the medical authorities on the Rand gold mines were the first in the world to start mass radiography. He referred to the low incidence of the disease in the native reserves. One rural community of 2,000 Bantu was kept under observation for eight years and during that period only three people died from tuberculosis. Investigators had found over 65% of the population in rural areas tuberculin-positive, and in a recent survey 73% of children under 15 were positive. There must be ample opportunity for infection in the reserves, but despite this the mortality was relatively low. Mr. W. H. Kitson, agent-general for Western Australia, said that the government of his province had undertaken a programme of mass radiography of the civil population.

Other speakers were from New Zealand and India, and, at a subsequent session, from Cyprus, the Gold Coast, Ceylon, Fiji, Singapore, and the West Indies.

Mr. A. Creech Jones, Colonial Secretary, in addressing the Conference on the colonial aspects of the anti-tuberculosis campaign, acknowledged the debt which the Colonial Empire owed to the National Association for the Prevention of Tuberculosis. Through the agency of that body, he said, detailed surveys of tuberculosis in the West Indies and in Cyprus had been carried out, and others were envisaged.

B.C.G.

An important session was devoted to specific measures in the prevention and treatment of tuberculosis, including B.C.G. and streptomycin. The chair was taken by Prof. S. Lyle Cummins. Prof. W. H. Tytler, of the Welsh National School of Medicine, said that for specific immunization there was only one well-established method—namely, inoculation with the bacillus of Calmette and Guérin (B.C.G.) Its only prospective rival was the vole bacillus, or murine tubercle bacillus of Wells. Specific treatment to-day meant streptomycin; here again there were some potential competitors in the background. Before he died in 1933 Calmette claimed that among a million vaccinated not a single case had been proved due to B.C.G. culture, and that claim remained unrefuted to-day for double the total. The effectiveness of the method was more difficult to assess. The earlier French statistics were open to criticism, but the impression remained that the reduction in deaths was real. In countries where child tuberculosis had decreased under improved control the interest in B.C.G. as applied to infants had waned; its main interest to-day arose out of its new use in the immunization of those who had reached adult life uninfected and therefore non-immune. Immunization of young adults was applied mostly to those in contact with infection, such as nurses and medical students, but it was steadily being extended to the whole population in a number of countries. As the infection rate in childhood fell, more and more people would reach adult life uninfected and, so long as infection was widely present in the community, would require artificial immunization.

Touching on streptomycin, Prof. Tytler left the question of its value to later speakers, but he said a word on what it could not do. It could not cure advanced tuberculosis in the dramatic way in which penicillin acted on acute infections. He himself thought they were more likely to have prevented advanced tuberculosis before they were able to cure the disease rapidly. Streptomycin had produced some striking results in certain limited forms of tuberculosis and it had had a generally favourable effect in early pulmonary disease. For these effects alone it was probably worth while going on with its expensive production, but it was difficult to hold a proper balance between, on the one hand, crying down a drug which did not produce dramatic results and, on the other, expressing a too favourable opinion which would raise public hopes.

Dr. K. Neville Irvine, medical superintendent, South Oxfordshire Isolation Hospital, said that he understood that B.C.G. vaccine was shortly to be introduced into this country in a manner in which it could be fitted into existing tuberculosis services. Ideally, B.C.G. vaccination should be carried out first by segregating all the tuberculous members of the community, Mantoux-testing the remainder to see if they had ever had a tuberculous infection, putting aside the Mantoux positives as having already their acquired immunity, and inoculating the Mantoux negatives with B.C.G. vaccine, allowing six weeks for their immunity to develop. A scheme formulated on these principles, though feasible in Great Britain, would be impracticable in remote native villages, and he suggested for such territories a greatly simplified scheme, using the existing service for the vaccination of the natives against smallpox. Empire laboratories should be suitably placed for the production of B.C.G. vaccine, which should be issued direct to the vaccination service. A subsequent speaker, Dr. K. S. Sanjivi, of Madras, as representing a country with communities heavily infected with tuberculosis, thought that Dr. Irvine's plan was dangerous over-simplification.

The Vole Bacillus

Dr. Arthur Quinton Wells, of the Sir William Dunn School of Pathology, Oxford, compared B.C.G. with the vole bacillus, the murine strain of tubercle bacillus widespread among small rodents. He agreed that the safety of B.C.G. was beyond dispute, and that it would be wrong to make so categorical a claim for the vole bacillus, but from the limited experience he had had and the few published reports the vole bacillus was innocuous to man. He had vaccinated 121 persons by various methods, nearly half of them three years or more ago, and the remainder about a year ago, and no cases other than of a purely localized disease had been seen. The local reaction caused by the vole bacillus in man was dependent on the depth of the injection into or beneath the skin. A subcutaneous injection frequently gave rise to a severe reaction, manifested by an indolent ulcer which might take many months to heal. He had abandoned that route of injection. The least troublesome reaction followed injection of the vaccine by multiple puncture, involving a number of simultaneous pricks into the skin. He admitted that there was no actual evidence that the vole bacillus reduced the incidence or severity of tuberculosis in man; there was, unfortunately, no known method of measuring human resistance, but if it was agreed that tuberculin-positive persons were less likely to contract tuberculosis it was interesting to note that reports from this country and overseas agreed that sensitivity to tuberculin following vaccination with the vole bacillus was greater and occurred earlier than that following vaccination with B.C.G.

American Work on Streptomycin

Dr. H. S. Willis, superintendent of the W. H. Mayburry Sanatorium, Michigan, and Dr. H. C. Hinshaw, of the Mayo Clinic, then told the story of streptomycin. Dr. Willis said that in the United States to-day six or more excellent laboratories were making explorations into streptomycin the chief feature of their research work. In the clinical field about 1,000 patients had completed their experience with streptomycin—an average course of from 90 to 120 days—and 600 more were now under study. Plans were also proposed for the regular clinical application of the drug to several hundred others, these apart from many more who were treated privately and without regard to study regimes. As a result of the work to date the use of streptomycin was regarded as "mandatory" in miliary tuberculosis and tuberculous meningitis, also in acute pulmonary tuberculosis, and in certain extra-pulmonary lesions. Here the application of streptomycin was "as essential as the use of anaesthesia in operations."

The research work on streptomycin was a co-operative venture in which the National Tuberculosis Association (Medical Section), the Veterans Administration, and the U.S. Public Health Service were concerned. A committee on streptomycin, of which Dr. Hinshaw was chairman, obtained 54 kg. as a donation from the manufacturers. The drug was parcelled out among eight investigators, whose work was co-ordinated by the committee. It was now well known that the average strain of tubercle bacillus sensitive to streptomycin at the beginning of therapy for some reason became drug-fast after the patient had had several weeks of treatment. The nature of this resistance was being explored, because it was an important factor in bringing about discontinuance of streptomycin treatment. Other laboratory studies consisted of investigations of dosage and the toxicity of the drug as it related to blood levels and its use in patients with damaged kidneys. The clinical work with patients was divided into two parts, one of them pioneer and testing, and the other mass application. Pilot studies had been made in connexion with several types of tuberculosis in which variables in dose and dose schedules were used. At present the acceptable cases fell into the following categories:

(1) Cases of bad prognosis in which some improvement seemed likely;

(2) Cases of bilateral acute disease not amenable to collapse therapy;

(3) Cases in which the lesion was known to be recent and progressive;

(4) Cases in which the patient had collateral symptoms out of proportion to the degree of pulmonary involvement.

The reason for co-ordinated effort was obvious in the study of a drug in so important a disease as tuberculosis. In ordinary circumstances someone evolved a drug or biological product with certain bactericidal or bacteriostatic properties and published a report. Another investigator read the report and decided to try the drug on animals. Then experimental pathologists took it up and confirmed or refuted the claims. Meanwhile clinicians decided to apply the product to patients, and in due course the results of these observations became common knowledge. But it often happens that enthusiastic workers were found to have claimed too much, the public were misled, and the general establishment of the treatment delayed. Co-ordinated effort justified itself when entered into by investigators for a given section of work and for the accomplishment of a certain job, recognizing that research needed and must have independence of thought and action. It was felt in the U.S.A. that very real progress was being made against the disease by the use of this drug; but only a relatively small proportion of all cases of tuberculosis were amenable to the drug as used at present, and streptomycin in no way replaced conventional methods of therapy.

Dr. Hinshaw added that the clinical work started less than three years ago, and the total number of cases reviewed to date was nearly 1,000. Streptomycin was being produced on a large scale commercially, probably about 500 kg. per month. He agreed that over-enthusiastic evaluation was a tragedy, and it was unfortunate that the discovery of streptomycin did not precede that of a drug like penicillin, of which it was not the equivalent. Unless all other forms of therapy were unavailing streptomycin should not be regarded as a satisfactory substitute for existing methods of treating pulmonary tuberculosis, but in tuberculous meningitis it might be found that its use would halve the death rate.

Dr. Selman Waksman, the discoverer of streptomycin, who was given a hearty reception by the Conference, said that he hoped to deal fully with the question at the International Congress of Pure and Applied Chemistry which is being held in London at the end of July. Streptomycin might not be the final word, but it pointed the way.

Spanish Work

Prof. F. Bustinza mentioned the work of two Spanish colleagues—Dr. Urgoiti, of Coruna, and Dr. Gaston de Iriarte, of Madrid. Dr. Urgoiti had been working for 15 years on anti-tuberculosis prophylaxis with B.C.G. and during the last 12 years had used the vaccine not only for the protection of the newborn but also for non-infected children and adults who were negative to tuberculin tests. He believed it to be a weapon of great efficacy. Dr. de Iriarte had devoted himself for 17 years to experimental study of anti-tubercuious vaccine therapy. The vaccine he used was prepared with *Mycobacterium tuberculosis* isolated from the patient and grown on a fluid medium, and he had used the filtrate in treatment with ultra-violet rays. Dr. Bustinza suggested that possibly the substance responsible for the antigen preparation might be some kind of polysaccharide present in the metabolic liquid in which the tubercle bacillus had been cultivated. If sufficient human tests confirmed the excellent results already obtained with this vaccine in animal experiments its use in combination with streptomycin might be found to give better results than either used alone, the streptomycin checking the growth of the tubercle bacillus and the other preparation bringing about the development of a specific immunity necessary for a complete success.

Dr. Esmond Long, director of the Henry Phipps Institute, University of Pennsylvania, said that he was wholly in accord with Prof. Tytler's views as to the possibilities and limitations of B.C.G. immunization. In the U.S.A. they had been cautious in the use of B.C.G. vaccine, first because they realized the need of rigid insistence upon statistical analysis of results, and, secondly, because the campaign against tuberculosis, as in Great Britain, was proceeding successfully. As Dr. Tytler had said, there were many reports for and against B.C.G. vaccination, perhaps the minority on the negative side; but the results obtained by men of impartial outlook and accustomed to statistical inquiry could not be ignored. Everybody would agree that B.C.G. was harmless for man, but there were reports of variations in strength, and some strains produced more significant skin reactions than others.

M.R.C. Experiments

Dr. P. M. D'Arcy Hart, member of the Scientific Staff of the Medical Research Council, who wound up the discussion, said that at the end of 1946 the Medical Research Council was provided with about 50 kg. of streptomycin imported in bulk from the U.S.A. The amount was sufficient for the treatment of 150 to 200 cases. A special "T.B. Trials" Committee was formed, Dr. Geoffrey Marshall presiding, and a "Non-T.B. Trials" Committee, with Sir Alexander Fleming in the chair. A small number of centres were opened, two in London, one in Glasgow, and one in Liverpool, and these had been increased until there were now eight meningitis centres in the country. The centres were all in hospitals with specialist staff available, and so far 60 patients had been placed in the centres. A small number of cases of acute miliary tuberculosis had been accommodated at three centres, and there were also some 40 or 50 cases of pulmonary tuberculosis under treatment, thanks to the co-operation of local authorities. It was much too early to assess the results with these last. It was evident that streptomycin benefited at least a small proportion of sufferers from meningitis and miliary tuberculosis, though the long-term results were in doubt. The results were sufficiently promising, however, to justify considering the wider use of the drug in these two diseases. Although British production was going forward, they were dependent on importation and on American allocation. Even when supplies became easier a proportion would be required for a long time for research in tuberculous meningitis, not to mention other forms of tuberculosis, especially pulmonary, where the results were much less definite. But the discovery of streptomycin represented the first real break in the struggle for specific treatment of certain forms of tuberculosis, and it was likely to be followed in the course of years by a stream of natural or synthetic drugs.

Striking claims for the value of B.C.G. in tuberculin-negative children and young adults exposed to more than average infection and in mass immunization of negative members of whole population groups had been made in a number of countries, particularly Scandinavia. A cautious approach was still evident in the U.S.A., and the same might be said to be true of Great Britain. As a balanced view it might be said that B.C.G. appeared to be of some value in grossly exposed persons, though degree of response and duration were still uncertain. The value in mass immunization seemed less clear. The danger of indiscriminate use in whole population groups was

the slackening of responsibility in other preventive fields. The Ministry of Health had authorized him to say that, having had under consideration for some time the necessary preliminary arrangements for the production of B.C.G. vaccine, it was now in a position to allow the production to go ahead. What use to make of the vaccine when produced should be the subject of careful discussion. It might be that it should be made available for further research by tuberculosis authorities in respect of tuberculin-negative infants in tuberculous families. More research was needed on the degree and duration of protection, and for this purpose controlled trials might be valuable. It seemed improbable that any well-tried methods of attack on tuberculosis would be abandoned, and they would all agree that the most important factor in lowering the incidence of tuberculosis in any community was a steady rise in the standard of living.

THE ROTUNDA BICENTENARY INTERNATIONAL CONGRESS

The International Congress of Obstetricians and Gynaecologists held in Dublin from July 7 to 11 attracted nearly 600 doctors from all over the world. Nowhere could they have been more hospitably received or entertained.

The Congress was opened by the President of Eire, who welcomed the delegates first in Irish and then in English. Sir Eardley Holland presided over the first brief session on the history of midwifery, and then the real business of the Congress began with six papers and a long and lively discussion on puerperal sepsis. In the evening An Taoiseach, Mr. de Valera, attended the reception in the Royal College of Physicians of Ireland given by Dr. and Mrs. Bethel Solomons. He was also present at the Tuesday evening reception given by the President of Ireland and Mrs. O'Kelly at Arus an Uachtarain. This was a reception in the grand manner with a thousand guests converging on Phoenix Park. Ministers of State, diplomats, and dignitaries of the Church strolled amicably on the great lawns, where green-kilted pipers were performing evolutions as complicated as the day's discussion on eclampsia had been.

On Wednesday there was a garden party in the grounds of the Rotunda Hospital. Dr. Ninian McI. Falkiner and Mrs. Falkiner received the guests, most of whom seized the opportunity to admire the chapel and to look in on a pathological display in the out-patient department. There was also an excellent film, and a conducted tour round the hospital. Many of the foreign visitors seemed to be most impressed with the clutch of premature babies incubating happily in air-conditioned splendour. Later the delegates were the guests of the Medical Association of Eire at a reception in University College, where they were received by Dr. A. Ryan, the President of the Association, and Mrs. Ryan. The Congress Dinner was on the Thursday, and on Friday a sherry party arranged by the Editors of the *Irish Journal of Medical Science* was followed by a special performance at the Abbey Theatre.

Exhibitions

There were two exhibitions. Dr. James Ryan, the Minister for Health and Social Welfare, opened the one at the Mansion House, where 44 firms contrived to display their wares in a space that would barely have been adequate for half that number. White panelling, chromium plating, and skilful lighting attracted the curious. They were then exhorted by bright young spellbinders who, despite their accents, might well have been born within shouting distance of Blarney Castle.

Less obtrusive and nearly as popular was the exhibition of books and manuscripts which Dr. J. D. H. Widdess had arranged in the library of the Royal College of Surgeons in Ireland. Noteworthy exhibits were McBride's case-book and his notes on Smellie's lectures; the book of sedan chair licences issued by the Governors of the Rotunda; early minute books of the hospital; and the Master's Book for 1793 and some more recent years. Also displayed was a copy of the *Speculum Matricis, or the Expert Midwives' Handmaid* of 1671. It is apparently one of the four copies now known to exist of this the rarest of all midwifery books. The only known specimen of a Rotunda Hospital Governor's Pass was also displayed. It was from this metal Pass that the design was made for the Bicentenary Congress badge.

Though this was a Rotunda Bicentenary, both the Coombe and the National Maternity Hospital had their share of visitors and took as active a part in entertaining them. Thanks to the Sweepstakes funds large sums have been spent in recent years in extending the Rotunda. The National Hospital has been newly built and finely equipped and the Coombe is next in line for a new building.

Six Sessions

Justice will be done to the six sessions of the Congress only when the *Transactions* are finally published. Ireland fortunately seems to have no shortage of paper. On each subject there were one or two outstanding contributions, and it was noteworthy that they came as a rule from the pathologists and bacteriologists, from the laboratory rather than the labour ward. The least satisfactory morning was that devoted to eclampsia. Dr. Gibbon FitzGibbon, a former Master of the Rotunda, paid a tribute to Tweedy. Dr. Falkiner, the present Master, said that he had never been able to subscribe to the theory and method of treatment propounded by Tweedy and promoted by his successors. Other speakers were just as divided on questions of aetiology and of treatment. Prof. H. J. Stander, of New York, presented a classification of old and new theories of causation and seemed to sum up the general feeling with his considered conclusion: "There are more than enough theories. What is needed is more data!"

One of the most satisfactory sessions was that on shock in obstetrics. One speaker after another urged the abandonment of Crédé's manœuvre for expression of the placenta and stressed the need for blood or plasma given early and often. In this as in other discussions all the speakers seemed concerned about the problem of improving the standard of obstetric practice of the general practitioner. The point was well put by Prof. J. P. Greenhill, of Chicago. In the final session on foetal and neonatal mortality he quoted Yerushalmy's estimate that 1,225 conceptions were necessary to produce 1,000 infants surviving their first year of life. Foetal lives could be saved by proper antenatal care and by the prevention and treatment of prematurity, birth injuries, and the toxaemias of pregnancy. Ideal antenatal care should start with a thorough examination "before she plans to become pregnant." Then he went on to say that obstetricians were aware of the methods of preventing many foetal and neonatal deaths, but they conducted only a very small proportion of deliveries. Any future reduction in maternal, foetal, and neonatal mortalities could be achieved only by the proper training and instruction of students and practitioners. The same point was brought out in the session on puerperal sepsis and, with a different emphasis, in that on sterility.

This was a successful Congress and it was clear to everyone attending it that those responsible for its organization must have been planning carefully for two years and working hard for at least six months. Yet every day showed again the dilemma peculiar to Congresses of this kind. Many of the opening speakers were reading thoughtful papers which were intended for publication. They may well make good reading but they are not easy to listen to, and Prof. Subodh Mitra, of Calcutta, had the courage to say in one general discussion that he had been disappointed. He had, he said, not travelled all the way from India to listen to a series of postgraduate lecturers. What he wanted was the to-and-fro of discussion, and the length and number of the opening papers left too little time for this. In an attempt to meet this difficulty later sessions were conducted on exact time-limits with the offenders being ruthlessly "gonged." This helped in some instances, but was unfortunate in that at least one distinguished visitor was cut short in the middle of a carefully prepared thesis.

All the sessions were recorded, and, for those who wanted to listen again, could be played back. It may be that the Editors of the *Transactions* have a verbatim account in mind.

This was a notable Congress, a cordial demonstration of Irish hospitality, and a fitting celebration of the Bicentenary of the Rotunda.

On the appointed day for the National Health Service all hospitals vested in a local authority will be transferred to the Ministry of Health. The Minister has therefore asked local authorities to inform him of interest in land and premises held by them on March 31 of this year for hospital purposes.

Reports of Societies

BRONCHIECTASIS IN CHILDREN

A meeting of the Faculty of Radiologists was held in Birmingham on June 26 and 27, when discussions were arranged on bronchiectasis in children and on primary bronchogenic carcinoma, and various other papers were read.

Prof. J. M. SMELLIE, of the Children's Hospital, Birmingham, defined bronchiectasis as a permanent dilatation of one or more bronchi, in association with chronic inflammatory and degenerative changes, a progressive disease, localized or diffuse, affecting any part of the lung but uncommon in the upper lobes. He discussed the aetiology, symptomatology, and physical signs. A few cases arose without any antecedent history of respiratory infection, but in the large majority one or more attacks of pneumonia was the common story. In a series of 34 cases recently investigated at his hospital three-fourths gave a history of antecedent pneumonia, half of them associated with whooping-cough. The significance of early symptoms could not be overestimated. Cough, usually dry in the early stages, was an almost constant symptom. A common story was repeated attacks of bronchitis. Pain in the chest was rarely complained of, and haemoptysis was infrequent. Anaemia, night sweats, dyspnoea, and clubbing of fingers were evidences of advanced and widespread disease.

Physical signs varied widely. In general the signs were those of bronchitis. At their best, physical signs could never be more than suggestive and might be misleading. For decisive diagnosis radiological examination of the chest following the introduction of lipiodol was essential. To wait until the radiological picture was unequivocal in a straight postero-anterior or lateral film was to wait too long. Until recent years treatment had been largely medical, but brilliant advances in thoracic surgery and in chemotherapy had already revolutionized prognosis in the established case and focused attention on the importance of diagnosis at an early stage. The keynote to prophylactic therapy was promptness in the treatment of all children suffering from pneumonia whose resolution was delayed. Elimination of sinus infection, combined with penicillin sprays and aerosols, was a major measure. At a later stage, when some dilatation of the bronchi was demonstrable, medical measures might still suffice, but treatment must be energetic, sustained, and continuous. Upper respiratory tract infection must be treated, postural drainage instituted, inhalations of penicillin employed. The practice adopted at his hospital in cases of early bronchiectasis was inhalations of 20,000 units of penicillin dissolved in 1 ml. of isotonic sodium chloride in a nebulizer, each inhalation being continued for 8 to 12 minutes and repeated three-hourly seven times in 24 hours. In cases of frank bronchiectasis lobectomy was now recognized to be the best treatment. Here again, however, a full course of medical treatment should be given before operation.

Dr. JOHN C. BISHOP supplemented this contribution with a paper dealing more particularly with radiographic technique. The radiological diagnosis of bronchiectasis, he said, depended on two separate procedures, the examination of the routine radiograph and of the radiograph made after the introduction of radio-opaque oil into the bronchial tree. The routine film of the congenital form would vary according to whether the cysts had or had not become infected. That of the acquired form was far less typical, and the appearance might range from that of normality to gross radiological disease. It was on the bronchogram that the diagnosis of acquired bronchiectasis must be based. He indicated the findings which demanded a bronchogram.

Dr. Bishop then summarized the four methods used for introducing the oil into the bronchial tree—namely, the supraglottic, the endotracheal, and the intranasal routes, and cricothyroid puncture. For children the choice lay between the last two, and every case must be considered on its merits. In any case postural drainage was an essential immediate preliminary to ensure that the bronchi were as empty as possible. At the Children's Hospital, Edgbaston, for the past few years the intranasal method—the oil being injected directly into the nasal cavity, with the tongue pulled firmly forwards—had been used, with a general anaesthetic. To his constant amazement the oil trickled down through the larynx—incidentally a pretty demonstration of what might be the fate of the discharge from an infected sinus when the cough reflex was dulled by sleep.

Primary Bronchogenic Carcinoma

In the second principal discussion Dr. THOMAS LODGE, of Sheffield, reviewed 130 cases of primary bronchogenic carcinoma, of which 55 had been confirmed by biopsy, bronchoscopy, or necropsy. The predominant symptoms in order of frequency corresponded roughly with other published series. In 32% of the cases the pain was entirely on the side of the tumour. The pain was higher in the chest with upper lobe lesions and in most cases was not at first associated with pleural effusion. In distribution the disease seemed to have a predilection for the right lung. As for radiological types, the largest group showed collapse, which supervened rapidly rather than slowly. Bronchiectatic collapse in a patient of cancer age, with cough, pain, loss of weight, and dyspnoea, should be regarded as due to cancer until proved otherwise. The hilar type accounted for the next largest group. This type of appearance, without collapse, usually meant that the peribronchial or tracheo-bronchial lymph nodes were involved and that surgery was not likely to be successful, though some cases of the so-called hilar type, as seen in postero-anterior projection, were really segmental in distribution, and offered the surgeon a better chance of removal. The peripheral carcinoma was a commonly occurring form.

Bronchography showed an early intra-lumen lesion more convincingly than tomography, especially when the bronchus was not greatly narrowed, as in some inflammatory conditions. But tomography had many important uses, especially in the peripheral growth. It brought out the typical ragged thick-walled cavity of the breaking-down growth, not visible in the straight radiograph, or the peripheral tumour beginning to reach out along the lymphatic pathways towards the hilum.

Dr. A. BRIAN TAYLOR said that there was no doubt that carcinoma of the bronchus was occurring more frequently than formerly; this increase was absolute and not due merely to improved diagnosis. From 1936 to 1943 at the Birmingham United Hospital there were 604 cases. The preponderance in males, 5 to 1, was striking, and the average age, 54, compared closely with other series of figures. The disease was rapidly fatal, and though a few cases survived for periods up to 39 months, the average duration of life after diagnosis was 4 months. A suitable case for pneumonectomy was one diagnosed early enough for a radical resection of the lung which could remove the whole growth before extension to neighbouring structures or glands had occurred and while the patient's general condition made the operation itself feasible. But it was early diagnosis that was difficult. Radiology offered great help in many cases, but in the earliest stages a small lesion in the region of the hilum might show little or no significant shadow. Bronchoscopy was the final and most valuable method of diagnosis.

Mr. A. L. D'ABREU said that although many successful pneumonectomies were performed, a large number of cases were quite inoperable when first seen by the surgeon. After mentioning the criteria of inoperability and describing the operable case, he said that he had the conviction that in the treatment of lung carcinoma there was not sufficient co-operation between radiotherapists and surgeons. When a surgeon referred a case for irradiation he should state whether the treatment expected was palliative or radical. The exact bronchoscopic findings giving the precise position of the growth should be clearly stated so that the therapy could be directed to the lesion itself and not, for instance, to the resultant atelectasis.

Among other speakers Dr. PETER KERLEY gave a statistical review of carcinoma of the lung based on the mass radiography figures of the Registrar-General and the Ministry of Health, but as both these departments had requested him not to publish the figures he had to tell the meeting that for the time being they were confidential.

Correspondence

Medicine in the United States

SIR,—Being a very young doctor, it is with some diffidence that I criticize our old-established customs and institutions, but the letter of Dr. S. L. Simpson (June 28, p. 949) shows up in sharp contrast to many of the criticisms I have heard from my friends and seniors about medicine in the U.S.A.

I spent 2½ years at medical school in Boston, with a three-month break to visit Johns Hopkins, and feel justified in making a few comments on the contrast between these schools and our own London and university teaching systems. Without doubt the most inspiring teaching that I have ever had was at Harvard Medical School; and yet, taken as individual teachers, some of those from whom I have been privileged to learn in this country are without equal anywhere. It was not the system of teaching at Harvard that impressed me, with its frequent examinations throughout the course, which came first as a rude shock and then as a rather unpleasant stimulant to one used to the more haphazard and individualistic Cambridge ideas, but the atmosphere. It was the continual thirst after new knowledge of our teachers and the way in which they accepted all criticism and questioning, whether from students or colleagues, as genuine attempts at furthering knowledge rather than sly traps by rivals. Everyone was kept very much alive, and a spirit of friendship and co-operation pervaded.

Dr. Simpson mentions the "collaborative sessions" at the Peter Bent Brigham Hospital. One of these was a weekly event called the "Clinico-Pathological Conference" and locally known as the C.P.C. (The Massachusetts General Hospital also had one weekly.) These were so good and so helpful to us as students that I feel justified in describing them in the hopes that a similar session may be introduced into some of our hospitals. They were organized by the pathology department, which would collect the notes from an old case that had been treated in the hospital and extract them on to a mimeographed sheet containing: (1) the patient's complaint as described by himself; (2) the past history of the patient up to admission; (3) the clinical findings as recorded on entry and the relevant laboratory findings; (4) a very brief outline of the patient's course in hospital, finishing with either "an operation was performed" or "the patient died." These sheets were distributed to all those attending, and a guest speaker, usually from another hospital but certainly a doctor who had no previous knowledge of the case, was invited to discuss the diagnosis and therapy. *X*-ray films were provided, and he could, if he wished, ask for and expect advice on any points outside his own specialty. The case was always chosen taking into consideration the speaker's special subjects, so that we could listen to an expert analysing a case in his own field. The speaker would go through the case point by point giving his differential diagnoses and stating how he thought the recorded course of the patient fitted these or ruled them out. At the end, if the case was surgical, the surgeon who operated would tell of his findings, or, if medical, the pathologist would give the necropsy findings, illustrated with photographs and sections on the screen. The speaker was often wrong in his diagnosis, because the cases were difficult and had often caught out the staff of the hospital, but no one was offended and everyone felt that they had gained by the experience.

Latterly the Brigham went further, and final-year students, usually about eight at a time, were occasionally briefed a week beforehand for the discussion, being given the case history to think about. This gave them a chance to look up the relevant literature. (I believe that most of the speakers were given some warning.) On the appointed day the students took the front seats and one was drawn by lot to speak. This victim then had to discuss the case before his teachers. These conferences were voluntary but were very well attended, being one of the most popular features at the medical school.

There is just one other point that I should like to make emphasizing a statement in Dr. Simpson's letter, because I hear so much about the American laboratory diagnostician. I had more teaching in psychosomatic medicine at Harvard than I have seen or heard of in England. Also my instructor in medicine once said to me, "If the laboratory data do not agree with your clinical findings, have the tests repeated. If they still do not agree, neglect them." The laboratory work at Harvard is not a short cut to diagnosis but an adjunct to research and sometimes a gauge of the patient's progress under treatment. My criticism of medicine in Boston is that it aims too much at research, if that is possible.—I am, etc.,

Ely, Cambs. N. K. CONNOLLY.

World Medical Association

SIR,—In the Supplementary Report of Council (*Supplement*, June 21) I was very glad to see that the Council had prepared a statement to be submitted to the General Assembly of the World Medical Association in September, 1947. As I have been appointed by the Medical Women's International Association in my capacity as their honorary treasurer to act as an observer at the meeting of the Assembly, I should like to take the opportunity of saying how strongly I agree with the Council's view that the medical profession as a whole have a grave responsibility towards their fellow men, not only as doctors but as leaders of public opinion in the field of moral and ethical values.

During the terrible years of occupation by a brutal enemy the large majority of doctors of most of the occupied countries maintained their moral integrity, their unswerving loyalty to their patients, and their spiritual and professional freedom, even at the risk of torture and death. They thereby set a great example and vindicated the honour of their profession.

Now that the war is over we are faced with a curious and dangerous shift of values. On the one hand men and women in so many countries are refusing to submit in any particular to the power of individual employers, while on the other hand they appear willing and even eager to denude themselves of every vestige of personal and political freedom and to surrender all their liberties to the State. This must lead insidiously but surely, as it did in Germany, to a growing disregard for the value of the life and human rights of the individual. As the Council so truly says in its statement, "The doctors who took part in these deeds (i.e., medical war crimes) did not become criminals in a moment. Their amoral methods were the result of training and conditioning to regard science as an instrument in the hands of the State to be applied in any way desired by its rulers." The Council might have added that the doctors were trained and conditioned to regard human beings, including their patients, as mere robots or sub-human statistics entirely unimportant in themselves, and therefore subordinate to the will and interests of the State and its rulers.

This horrible distortion of values is one which doctors have an especial duty and, if we will only use it, a considerable measure of power to resist and overthrow wherever we find it developing in our midst. The principles which are included in Appendix 2 to form a part of a Charter of Medicine are fundamental, but I would suggest that they should be extended to include a statement that the medical profession affirm their belief in the sanctity of the rights of the individual as a human being, and pledge themselves to safeguard these rights in all their dealings both with their patients and in relation to any function which they may be called upon to exercise in their capacity as medical men and women. Let us never forget that "the price of freedom is eternal vigilance."—I am, etc.,

London, W.1. DORIS M. ODLUM.

Symmetrical Gangrene in the African

SIR,—The condition described by Dr. Michael Gelfand (June 14, p. 847) appears to be of sufficient rarity to justify my quoting an almost identical case which fulfils his six diagnostic criteria. The patient was seen in the province of Sidamo, Ethiopia, in 1945.

CASE REPORT

An adult male Sidamo aged between 30 and 35 was brought by his friends from a village some long distance away. He gave a history of being in good health and symptomless until some 3-4 months previously, when quite suddenly he had an attack of "rheumatism" in his legs and feet, which became swollen and painful. A little later the toes and soles of his feet appeared "as though dead." There was no history of recent attacks of malaria, typhus, or other disease. He had had syphilis at least ten years before, for which he had not received any treatment. His general nutritional state was good, and his diet appeared satisfactory.

On examination a condition rather similar to that shown in Gelfand's first photograph was seen, though more advanced. Both feet were blackened, dry, and wizened, particularly on the underside, and flies were crawling in and out of the various cavities in the mummified gangrenous area. The line of demarcation was not as pronounced as is shown in Gelfand's second photograph, but ran from about 1½ in. (3.81 cm.) proximal to the base of the toes to just below the level of the malleoli. No pulsation could be felt in the dorsalis pedis or in the femoral artery of either side. There was

apparent slight hyperaesthesia proximal to the line of demarcation, which might be explained by the band of hyperaemia as described by Gelfand. Knee-jerks were indeterminate. Wassermann examination and blood counts could not be performed. The urine was free of sugar and albumin.

The patient refused operation and would not enter hospital, so his further progress is not known.

Williams (1939), discussing the results of 894 post-mortem examinations in Uganda, found 86 cases showing syphilitic arterial disease and considers that this is common in East Africa. Coombs (1932) points out that lesions most commonly follow one, two, or more decades after infection. This would fit in with the age groups of both Gelfand's and my cases, particularly when it is remembered that the African often acquires his syphilis relatively early in life.

Prior to Gelfand's paper I had considered my case to be definitely one of syphilitic origin. Now the question requires reconsideration. It may be that the part played by syphilis is merely an initial damage to the artery (Gordon *et al.*, 1942), on which further processes later bring about an ischaemia sufficiently suddenly to cause gangrene. On the other hand in cases where gangrene has followed syphilis the onset has usually been much less sudden than in these seven cases. Choussat (1938), for instance, describes a case of bilateral dry gangrene of the feet, of slow onset, in a child of 10. Bilateral gangrenous areas on the arms of a white woman of 61, in which the lesion on the left preceded that on the right, is cited by Goodman (1939). Similar cases will be found in papers by Fusco and Kell (1943) and Leone Bloise (1936), though I have personally not yet been able to trace them.

When the high rate of syphilis in certain native populations is taken into account, figures ranging from 23% (Kark and Le Riche, 1944) to 40% (Rauch and Saayman, 1938) being substantiated by various authors, the fact that three out of these seven cases of bilateral gangrene of the feet had syphilis may not be of significance but merely a coincidental finding.—I am, etc.,

London, W.C.1. JOHN G. SALTER.

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Peptic Ulcers and Radiology

SIR,—It was with considerable interest that I read Dr. A. Landau's contribution under "Medical Memoranda" (June 28, p. 928) in which he describes a case of peptic ulcer responding rapidly to a line of treatment advocated by himself. Without wishing to comment on the efficacy of the treatment described by Dr. Landau I would like to point out that it is not an uncommon experience among radiologists to find an apparently large gastric ulcer become almost undemonstrable radiologically after a few weeks' medical treatment on the usual accepted lines. This is due mainly to the fact that the apparent depth and size of the ulcer, as demonstrated on the *x*-ray film, is much greater than the actual depth. Most of the apparent depth is made up of the swollen oedematous edges of the ulcer projecting into the lumen of the stomach, while the actual ulcer crater is often quite shallow, as has been demonstrated at operation.

On conservative medical treatment the first thing to subside is the oedema, thus producing apparently rapid healing radiologically, but the actual shallow ulcer crater can often be demonstrated for some time after the initial rapid reduction in size. The first *x*-ray photograph illustrating Dr. Landau's case (allowing for loss of detail in reproduction) would appear to show one of these typical apparently large craters with some narrowing of the neck and projection inwards of the oedematous edges. If the normal line of the lesser curve is followed, it will be found to include only a small proportion of the ulcer base, which is probably the true depth. In view of the above points I am of the opinion that to describe this ulcer as "the size of a cherry" is misleading in the assessment of its ultimate progress with regard to the treatment described.—I am, etc.,

Orpington, Kent. RONALD L. MANSI.

The Thalamic Syndrome

SIR,—Any new approach to the treatment of psychoses is welcome in view of the limited value of present methods. I do not think, however, that the dogmatic statements with which Dr. G. Tayleur Stockings (June 28, p. 918) prefaces his account of work on a drug resembling Indian hemp are very helpful. He blames the thalamus for the symptoms associated with reactive depression, the list of which reads like a proprietary medicine advertisement. The logic of this claim is, however, not apparent. To pick out two of the symptoms at random, it is not clear on what evidence tremors and obsessional thoughts are attributed to dysfunction of the thalamus. True, Stockings goes so far as to admit that the hypothalamus may also be involved in "the thalamic syndrome," but why seek to exclude any part of the brain from involvement in this pantechnicon syndrome? At one point the thalamus is referred to as a "higher centre." It would appear to have been promoted recently. In fact the majority of the symptoms which he describes as being produced by the drug under investigation, which Stockings refers to as having a specific effect on the thalamus, appear to be at least equally attributable to cortical changes. Thus photopsias, simple coloured patterns, visual illusions, increase in the power of phantasy, and vividness of visual imagery are surely not characteristic of thalamic activity.

In the past there has been a tendency to neglect the thalamus as a factor in the production of neuroses and psychoses. This fault will not be remedied, however, by swinging violently to the other extreme. What is needed now is an effort to see the brain as a functioning unit with the different centres balanced harmoniously, one against the other. This dialectical concept would avoid the clumsy attempt to divide off "neurotic depression" artificially from psychotic depression, and to divorce it on the other hand from environmental factors, and to pin it for the sake of formal neatness on to one particular region of the brain.

Incidentally, Stockings states that the "true addiction syndrome" is peculiar to morphine and cocaine. I had always been under the impression that alcohol sometimes caused addiction, but possibly this drug is now in such short supply that it can be neglected.—I am, etc.,

St. Mary Cray, Kent BRIAN H. KIRMAN.

Vaccination against Variola

SIR,—The outbreaks of variola in this country in recent years represent a danger which should not be regarded as negligible in a population whose standard of vaccination is constantly declining. The number of contacts who develop the disease although vaccinated—or to the greater part revaccinated—at a time when successful vaccination, due to its shorter incubation period, should protect against the outbreak of variola is not very small. What is the reason?

I think that it will often be very difficult even for an experienced vaccinator to decide whether a small local reaction can be regarded as evidence of successful revaccination. How much more so in the case of many practitioners who had little opportunity to acquire the necessary experience with revaccination. It is, therefore, very likely that those contacts who developed variola under the above-mentioned conditions have been revaccinated unsuccessfully.

I should like to mention a point in my own personal experience. During my own medical career I have been in contact with variola patients on a number of occasions, and I have been revaccinated about ten times. Only once, many years ago, a very slight papular reaction made it rather likely that vaccination was successful. On all the other occasions the evidence was at least very doubtful. The last time this happened was in the third year of the last war. About two years later I inoculated myself from pure curiosity with the contents of a vesicle of a primarily vaccinated child, and I developed a large and very typical vesicle which would have given an excellent

textbook illustration for the effect of primary vaccination. Also the clinical course was only slightly shorter than that of primary vaccination.

This proves again the well-known fact that, especially in the case of revaccination, much better results can be expected from the use of human lymph as compared with calf lymph. The use of human lymph has practically been abandoned because of the danger of transferring syphilis, erysipelas, and other infections. But nowadays syphilis can be easily excluded by serological examination, and penicillin and the sulphonamides have greatly diminished the danger of septic infections.

Under these circumstances might it not be quite reasonable to use human lymph, if available, instead of calf lymph in such persons who as contacts are in immediate danger of developing variola and becoming themselves again a focus of further spread ?—I am, etc.,

London, N.W.1. G. FRIEDLAENDER.

Physical Therapy of Mental Disorder

SIR,—The numerous letters you have published recently and in 1946 on physical therapy in mental disease indicate the interest the profession takes in the subject, and many of the general public show considerable interest also. In my letter in the *Journal* of March 23, 1946 (p. 447), I suggested proof of the efficacy of this treatment should be the percentage of recoveries on admissions in the report of the Board of Control. The report for 1945 was issued some time ago, and the recovery rate for that year was 33.2%—males 28.1% and females 36.7%—of the direct admissions, or slightly less than in 1939. The recovery rate for many years has been practically stationary.

The percentage of cases discharged as relieved has, however, risen considerably, the combined number of recovered and relieved being 63%, compared with 48% before the Mental Treatment Act of 1930. In their comments the Board state, "It is difficult to say whether the increased discharge rate is due to improved treatment or to the large number of voluntary admissions." It will be noted it is an increased discharge, not recovery, rate that reference is made to, and at least one popular paper seems to have confused the two. In 1945 the voluntary, temporary, and certified admissions were 50.7, 4.1, and 45.2% respectively. In 1934 the voluntary admissions were 29%. In 1945 the number of voluntary patients discharged as relieved was 5,872, as compared with 2,672 certified, the recoveries being 4,900 and 4,544 respectively. Possibly shortage of staff and beds may have contributed to the relieved discharges.

The stationary recovery discharge rate does not necessarily imply that E.C.T., leptazol, etc., are not of some use. Owing to the advanced average age of the community more senile admissions may have taken place; also there are fewer admissions of recent alcoholic psychoses, the latter a favourable type as regards prognosis. A good many Service patients may have been treated with or without convulsion therapy, and recovered, in places outside the jurisdiction of the Board of Control, and possibly the same applies to a number of civilians. Nevertheless the stationary rate in the mental hospitals does tend to show that the treatment may not be so efficacious as many consider.

In your issue of April 6, 1946 (p. 548), you published a letter from Dr. Ian Skottowe in which he stated that in 1945 the "useful discharge" rate for the Bucks Mental Hospital was 63.4%, or, excluding those over 60, 87.8%, and that E.C.T. was used in not more than half a dozen cases. He did not state the separate percentages of recovered and relieved, but his results seem to compare favourably with those obtained in hospitals where E.C.T. is extensively used, and may be regarded as a useful control experiment. In any form of therapy in mental disease it may be said—it is more or less a platitude—that the better the original make-up of the patient the better the results. The best results with E.C.T. are with the affective psychoses, especially involution melancholia—i.e., where there is no dementia, and where the nerve cells, unlike those in dementia praecox, are durable. If those involution cases associated with arteriosclerosis, etc., are excluded a certain amount of depression at the involution age might be regarded as normal, and some cases of melancholia are merely exaggerations of this. Further, a person having no mental attack until that age must have had a better brain than one breaking down at 20, except perhaps in some cases that have had no severe environmental stress.

Half a century ago Bevan Lewis and Clouston in their textbook gave a 50 to 60% recovery rate in climacteric insanity. We know, however, that a number of involution cases go on to severe agitation, with distressing delusions, and if in fact E.C.T. prevents this it is indeed a boon. One would like, however, to see statistical proof.

In 1937 two medical commissioners of the Board of Control were instructed to visit Vienna, Budapest, and Frankfurt, also some English hospitals, to study treatment by leptazol and insulin, and their interesting report was published in 1938. I suggest that the time has now come when the Board of Control, the R.M.P.A., or the B.M.A. should appoint a body to make an exhaustive investigation into modern methods of treatment of the insane. So much E.C.T., etc., has been given in British hospitals that there would be no need to visit the Continent, where no doubt the ravages of war have seriously hampered treatment, but a visit to America might be of much use. Even if a satisfactory explanation of the mechanisms of these treatments cannot yet be given—and I understand anoxaemia is held by many to be the explanation in convulsive therapy—a comprehensive report would be of great value.—I am, etc.,

Hastings. HARVEY BAIRD.

*** This correspondence is now closed.—ED., *B.M.J.*

Sulphone Treatment of Leprosy

SIR,—A considerable amount of attention is being given to the question of the treatment of leprosy by means of the derivatives of diaminodiphenyl sulphone, and once again there is a tendency for treatment to receive precedence over prevention. In view of the fact that I started leprosy work some twenty-three years ago at a time when the enthusiasm for the hydnocarpus (chaulmoogra) derivatives was reaching its height, and when responsible authorities stated that leprosy should be eliminated from the Empire within thirty years, I think it might be well if I sounded a warning note. It would be a tragedy if errors of the past were repeated and a belief encouraged that the leprosy problem could be solved by curative measures alone.

Leprosy has its roots in the dim ages and has a disconcerting habit of confounding those who would be over-optimistic. The past twenty-five years are strewn with the results of alleged cures. It therefore would be wise for us to remember this and not publicize too widely a new hope. If we do, administrative authorities may once again find themselves thwarted when they had high expectations that the problem had become easy of solution. Further, we tend to forget the psychological effect on the patients, for those who have severe lepromatous leprosy clutch at a new remedy as a drowning man would grasp at a straw.

We have been using these new preparations in India for the past year or eighteen months, and the following is a brief summary of our preliminary findings:

"*Promin.*"—This substance is too toxic for ordinary use, and patients, in India at any rate, tend to show intolerance after some months.

"*Diasone.*"—In the dosage recommended it is very liable to set up lepra reactions, frequently extremely severe. Fourteen out of twenty-two cases showed such reactions, and five of these fourteen asked that diasone should be discontinued. The reactions could not be attributed to the usual course of the disease, for regular records of the number of reactions and the interval between the reactions before the administration of diasone had been kept. We found, however, that adequate blood levels (5 mg. %) were impossible to maintain.

"*Sulphetrone.*"—This remedy is not likely to be on the market for a considerable time. It is the least toxic of the sulphone preparations and has up to now caused no serious reactions. Further, the levels of the drug in the blood were satisfactory. Sulphetrone, in our opinion, has not been used over a long enough period for definite conclusions to be drawn. All that can be said at present is that workers are encouraged by the clinical improvement in lepromatous leprosy.

In conclusion I should like to emphasize the following points:

(1) The present methods of administration are not practicable of application on an extensive scale, except in institutions where patients are well regimented or sufficiently keen to be prepared to swallow these drugs in varying amounts, from three capsules of diasone to twelve tablets of sulphetrone per day, for long periods (2–4 years).

(2) These drugs should not be used without adequate blood level estimations. Regular blood counts and haemoglobin

estimations are not sufficient. A tendency to take lightly possible toxic effects may end in disaster.

(3) Failure, disappointment, or completely unreliable conclusions are likely to be drawn if used on cases other than the straightforward lepromatous type. It is to be remembered that the minority of the cases of leprosy in most countries are lepromatous.

(4) Even though the diaminodiphenyl sulphone derivatives proved to be effective in lepromatous leprosy, which is everyone's sincere hope, the leprosy problem would not be solved. It is essential to a better understanding of the disease that pathological studies, especially in connexion with cellular reactions in the skin, and epidemiological surveys should be continued. A proper appreciation of preventive measures, both with regard to infection as well as to the correction and prevention of deformities, is equally important. To reduce the problem of leprosy merely to one of therapeutics is to invite disaster and disillusionment.—I am, etc.,

London, N.1. ROBERT G. COCHRANE.

Gastrectomy and Gall-bladder Disease

SIR,—Drs. C. L. H. Majoor and Th. J. J. Suren (July 5, p. 8) postulate a possible relationship between subtotal gastrectomy and gall-bladder disease appearing subsequent to the operation. A relationship is known to exist between hiatus hernia and gall-bladder disease, and Bockus states that of all the complications of hiatus hernia gall-bladder disease and peptic ulceration occur most commonly.

Might I suggest that similar factors act in the production of cholecystitis (and, later, cholelithiasis) with both these entities? Points of similarity that spring to my mind are: (1) In both hiatus hernia and the post-gastrectomy stomach one has a reduced stomach volume, if one uses the herniated portion in the former for purposes of comparison. (2) Both conditions subject the oesophagus, stomach, duodenum, and jejunum to abnormal degrees of tension and reduce external mobility, and this may in turn lead to distortion of the biliary system. (3) Ecchymosis and mucosal disruption are common to both conditions—in subtotal gastrectomy at the time of operation and in hiatus hernia where strangulation exists or is imminent.

Other comparisons can be made with regard to blood supply, innervation, and emptying times in each. Whatever the causal or contributory relationship each has to the onset of cholecystitis and cholelithiasis, the immediate moral would appear to me to be that surgeons, after removing our stomachs, should leave us with a combination of viscera less closely simulating that seen in hiatus hernia.—I am, etc.,

Beckenham, Kent. BRYAN WILLIAMS.

REFERENCE

Bockus, H. L., *Gastro-enterology*, Philadelphia, Saunders, 1944, Vol. I, p. 158.

Bornholm Disease

SIR,—Sir Humphry Rolleston[1] describes in the *British Encyclopaedia of Medical Practice* the condition variously known as Bornholm disease, epidemic myalgia, or acute epidemic myositis. It is a disease of the later summer months, more common in patients under the age of puberty, and is apparently transmissible (by a virus not yet isolated) by direct contact, with an incubation period of 2–4 days. It is characterized by pain—specially associated with respiration—whose onset may be very sudden, commonly in the upper abdomen, also experienced in the pectoral muscles and in the back. Slight fever is constant, vomiting is rare. Headache and hiccough are also said to be features. It was previously described on the Danish island of Bornholm, but has also been reported (*inter alia*) in Holland, N. America, and this country by Pickles[2] in 1933. It runs its course in a week and the prognosis is good. Treatment is symptomatic.

The two cases described here appear to fit in in spite of the fact that headache and hiccough were not prominent features. They were seen in a north-east country practice. Pickles[3] discusses the diagnosis of this condition and states that three useful points are (1) the almost invariable absence of vomiting, (2) increased respiratory rate, (3) rarity or absence of cough. He also mentions intervals of well-being between attacks of the muscle pain. Weterings,[4] describing Dutch cases, stated that symptoms tended to pass off in 24 hours, often returning on the third day. These features are found in my two cases, which at first presented a diagnostic puzzle in which acute abdomen, lobar pneumonia, and pleurisy had at some stage to be excluded, but the absence of cough or vomiting, and the fact that there was probably a common cause of the two sisters' condition, led to the conclusion that they were cases of Bornholm disease. I have not seen any other cases to my knowledge.

CASE HISTORIES

Case 1.—An otherwise healthy girl from a good home, aged 9 years. Previous history, nil of significance. Chicken-pox and whooping-cough in infancy, and tonsils and adenoids removed three years ago. She was first seen early on the morning of May 31, 1947, having been awake most of the night with epigastric pain and pain in the right shoulder. Bowels had been regularly opened till May 30. There had been no vomit or cough and no sore throat or coryzal symptoms. The previous day she had been walking a lot on stilts and her parents thought the unaccustomed exercise had strained her muscles.

On examination temperature was 99° F. (37.2° C.), pulse 96, and respirations 24. Tongue furred white. No abnormality was detected in nasopharynx, chest, or abdomen. No rash seen. By the evening her temperature had risen to 100° F. (37.8° C.), pulse was 120, and respirations 32 per minute. She complained that the pain was catching her breath, and the movement of the right base was diminished, but apart from fainter breath sounds at this location no abnormal physical signs could be detected in the chest or abdomen. There was still no cough or sickness.

Next day, June 1, the temperature, pulse, and respirations were normal, and the pains had diminished. On June 2 temperature was normal, pulse 96, respirations 36. Respirations were laboured and she complained of pain in the back catching her breath. No abnormal physical signs could be elicited. She was treated with an acetosalicylic mixture and made a good recovery. When seen four days later she had no complaints and has remained well since.

Case 2.—The older sister of Case 1, aged 12 years, had come in from tennis on May 31 complaining of pains across the front of her chest, which were thought little of owing to her apparent good health and the exercise she had just undergone. The weather was warm at this time, it should be said. Two days later, however, she complained of pains in the chest and left shoulder and upper abdomen and felt feverish. Her temperature was 99° F. and never seemed to exceed this during the ensuing days. She had no cough or sore throat, no sickness, and the bowels were regular. No urinary symptoms were complained of, but there was some malaise.

No abnormality could be detected in the chest or abdomen, and the throat was clear. (Previous history very similar to her sister's and not significant.)

She was also treated symptomatically, and with an acetosalicylic acid mixture. Her pains disappeared, and in four days' time she appeared to have recovered completely and has continued well since.

The two girls had been away with their parents for the week-end before they fell ill. Their movements were: May 22, Corbridge (Northumberland) to Bolton (night stop); May 23, 24, and 25, at Colwyn Bay; May 26, night at Bolton again; and from May 27 on they were back at home in Corbridge. Although the incubation period mentioned by Rolleston is 2–4 days, and the week-end at Colwyn Bay and the night at Bolton would therefore seem to be exempted as the dates of infection, it would be interesting to know if other cases have been seen in those districts lately, as otherwise the source(s) of infection remain a complete mystery.—I am, etc.,

Corbridge, Northumberland. A. McE. TURNBULL.

REFERENCES

1 Rolleston, Sir Humphry, *British Encyclopaedia of Medical Practice*, London, 1936, Vol. 2, p. 588.
2 Pickles, W. N., *British Medical Journal*, 1933, **2**, 817.
3 Pickles, W. N., *Epidemiology in Country Practice*, Bristol, 1939, p. 87.
4 Weterings, P. A. A., *Nederl. Tijdschr. Geneesk.*, 1939, **83**, 2326, and *Lancet*, 1939, **2**, 146.

*** An article on Bornholm disease appeared in last week's *Journal* at p. 47.—ED., *B.M.J.*

Training a Psychiatrist

SIR,—From the recent vitriolic correspondence which the article of Dr. D. W. Winnicott (May 17, p. 688) provoked a point emerges of more general significance than the merits or demerits of physical treatment in mental disorder, and that is the almost fanatical bias of the writers. This is a time of transition for medicine and especially for psychological medicine, and nothing retards progress more than failure to examine a problem with

a perfectly open mind. The dispute is analogous to that which raged and still rages round the Freudian school.

Closely related to such breadth of outlook is the question of the training and experience of would-be specialists in psychological medicine. Such experience should include residence in a mental hospital for at least two years, two years' experience as a certifying officer in mental deficiency, and a minimum of five years in a busy general practice (with obstetric experience). After such training one finds that on entering consulting practice as a psychiatrist one's experience dovetails to give a very different conception of the patient and his problem than would otherwise have been the case.—I am, etc.,

London, W.1. R. M. AYTON-ORMSTON.

Occupational Disease in Review

SIR,—The attention of the Departmental Committee on Industrial Diseases has been drawn to the leading article in the *Journal* of May 17 (p. 685) entitled "Occupational Disease in Review." The Committee welcomes the attention which the *B.M.J.* is giving to this subject but is concerned that the article should have failed to reproduce accurately its terms of reference, especially in regard to the phrase "to advise on the selection of diseases." It is feared that this may mislead some of your readers who may be in a position to give very valuable assistance to us in our work. The phrase might imply that the Committee has to recommend individual diseases for insurance. In actual fact it has to advise on "the principles which should govern the selection of diseases for insurance"—a task which involves careful reconsideration of the Samuel Committee's tests, but does not necessitate consideration of individual diseases except in so far as they represent questions of principle. The Committee's full terms of reference are:

"To review, in the light of modern industrial conditions, the policy adopted in scheduling diseases as industrial diseases under the Workmen's Compensation Acts, and to advise as to the principles which should govern the selection of diseases for insurance under the National Insurance (Industrial Injuries) Act, having regard to the extended system of insurance to be set up by the National Insurance Act and any other relevant considerations."

The Committee would appreciate evidence or suggestions from any persons or bodies interested in its task, who are asked to communicate with me. I shall be glad to supply an explanatory memorandum which has been prepared by the Committee, on request.—I am, etc.,

F. K. FORRESTER,
London, W.1. Secretary, Departmental Committee on Industrial Diseases.

Remuneration in the N.H.S.

SIR,—The patient who waits until he is ill, possibly at 3 a.m., before presenting his medical card for inclusion in one's list annoys, as also does his reply to one's subsequent query: "Oh, I didn't bother about it, as I wasn't ill." No amount of knowledge of payments from a central pool serves to eradicate the feeling that the man's capitation fee for the last, say, three years should have been one's own. As Dr. W. W. Newton anticipates (June 21, p. 902), the annoyance is likely to be greater and more materially felt after the appointed day. I do not agree with Dr. Newton's suggestion of introducing penalties to operate against those who fail to register with us. For one thing we as a profession do not wish to be party to penalizing our patients. The problem of the patient who is not on a doctor's list, or is on the list of the wrong doctor—i.e., after change of residence—is likely to be a serious one when the whole population is involved.

I would suggest that strong reminders be sent out to all who have not chosen a doctor within three months of the inception of the N.H.S., coupled with a warning that unless a doctor is chosen by the end of six months the patient will be allotted to a doctor, who may not necessarily be the one of his or her choice. (A rotation method fair to all doctors in an area could be easily devised.) As only a proportion of patients would be involved, doctors could probably stand a time-lag of six months without suffering financial hardship.

To avoid the central pool system and to ensure (*a*) that the doctor receives the capitation fees to which he is entitled and of which he has hitherto (on the N.H.I.) been deprived owing to defection on the part of the patient, and (*b*) that the doctor does not receive capitation fees relating to patients that have removed out of his district, I suggest that, at whatever time a medical card is presented to the doctor, his entitlement to capitation fee is reckoned from (1) the commencement of operation of the N.H.S., (2) the commencement of entitlement to treatment, or (3) the date of taking up residence in that doctor's area, whichever is appropriate, the dates being taken to the subsequent quarter day.

Thus, in the case of a patient who moves from A to B and then delays a year before presenting his medical card to the doctor at B, this doctor would receive one year's capitation fee, which sum would be deducted from the doctor at A, with whom the patient was formerly registered, but who for the last year was not in a position to render treatment.

I agree with Dr. Newton that everything should be done to publicize the necessity for the patients' timely action, but it is of no use to expect perfection or anything like it. One has only to ask one's patients to-day if they have read the instructions on their medical cards. The answer gives little promise, even though the card is headed "Please read carefully."—I am, etc.,

Beer, Devon. S. J. HADFIELD.

Filling in the Health Act

SIR,—Section 28 of the National Health Act has not received the attention it deserves. It should be called the National Health Charter. It enables the local authorities to launch schemes for prevention, care, and after-care of disease. A little reflection will show that the scope of this section is infinite in its possibilities. Local authorities must submit schemes to the Minister by Nov. 30, 1947. Here is a chance for all health enthusiasts to push forward any progressive ideas they may have. It is quite certain that the Minister will approve any reasonable scheme.

Unfortunately there is no sign as yet that much attention is being paid to this invaluable section. People are so steeped in the past that they cannot make a leap into the future. A certain important body has sent me some suggestions. Among them the following seven points appeal to me:

(1) Establishment and supervision for special industrial premises for categories of persons who could do certain types of work under proper supervised conditions (mentioned by the Minister in Committee C when replying to a question on mental patients). (2) Night sanatoria (referred to by the Minister in Committee C). (3) Local rehabilitation committees, acting with representatives of the Ministry of Labour, voluntary organizations, etc. (4) Homes for unmarried mothers. (5) Care of elderly persons, including recreational centres. (6) Periodic health examinations. (7) Bureau for health advice.

These are just a few of the possibilities that open out. In conclusion it is hoped that the schemes suggested will not be final, that an opening will be left in the scheme for additions in the light of experience.—I am, etc.,

Southampton. E. SAKOSCHANSKY.

International System of Weights and Measures

SIR,—I agree with much of what Mr. H. V. Stopes-Roe says in a rather recondite way in his letter (June 28, p. 950), and I have dealt with some of his relevant points, explicitly or implicitly, and rather more simply, in my article on the International System of Weights and Measures (April 5, p. 460). The litre is an arbitrary and independent unit, or, as Mr. Stopes-Roe puts it, "a unit in its own right," and if he likes to consider it as a mere stage towards a fundamental unit, he must nevertheless accept the fact that the litre has no derivative or cognate relationship with the cubic centimetre: each is completely independent of the other. Of course a volume relationship between the litre and the cubic centimetre can be established, but this relationship is purely empirical and can be ascertained only by an empirical method—the method of determination by experiment. I explained this in my article, and I gave the factors which enable this empirical relationship to be expressed in terms of one or other of the units.

I should like to have been able to go more fully into general meteorological considerations which interest Mr. Stopes-Roe (and me also), but my task was a narrow one; it was to set forth as concisely as possible the essential features of one system of weights and measures—the international system—and it was this only that I endeavoured to do.—I am, etc.,

London, W.14. J. M. HAMILL.

***This correspondence is now closed.—ED., *B.M.J.*

POINTS FROM LETTERS

Shortage of Nurses

SURGEON LIEUTENANT, R.N.V.R., writes: I wish to dissociate myself most strongly from the views expressed in the letter of "Ex-Q.A.R.N.N.S.R." (June 21, p. 903). Her sweeping and totally unjustified attack will be resented by a great number of patients, doctors, and Naval nursing sisters. The V.A.D. has done and is continuing to do a very good job of work. Having recently been in charge of a ward staffed by V.A.D.s I should like to bear witness to their not inconsiderable nursing skill and devotion to what is often a thankless job. The standard of nursing in any ward depends to a large extent upon the example and training given by those in charge, and for any lowering of that standard the sister must be held partly to blame. The educational and cultural level of the average V.A.D. compares very favourably with that of the first-year nurses whom I examined for the General Nursing Council. V.A.D.s often enrolled with the idea of making nursing a permanent career, but many have since been disillusioned, and such hasty and ill-conceived criticism and evaluation of their work may deter many others.

Miss DORIS C. HUGHES (Leamington Spa) writes: With reference to the letter of "Ex-Q.A.R.N.N.S.R." (June 21, p. 903), as a V.A.D. with 6½ years' service in the Navy I should like to point out: (1) I have received no encouragement whatsoever to take my training, and moreover when I applied to train at a well-known midland hospital in 1941 I was told, at an interview with the matron, that I was more use as a V.A.D. (2) At a sick quarters on the East Coast, where the staff was small and casualties frequently being admitted, V.A.D.s did all the dressings and assisted M.O.s with the cleaning up of wounds and burns in the dressing-room. There was a separate zymotic block in which we "specialled" cerebrospinal meningitis cases, nasal diphtheria with scalded throats—in fact, any fever case placed on the D.C.L. (3) Temperatures and medicines were always entrusted to a responsible V.A.D., and several sisters for whom I worked said that a capable V.A.D. was quite as competent as many S.R.N.s. I could cite several examples of "fingers instead of forceps" used by sisters. Many of my colleagues were so disheartened by their treatment with some sisters that any desire to train was crushed. If closer co-operation and less professional "jealousy" existed between S.R.N.s and V.A.D.s there would be many more nurses available now. . . .

Land of Excuses

Dr. G. C. PETHER (Colchester) writes: Dr. Bruce Williamson (June 28, p. 959) suggests that as a profession we failed to persuade the public to improve conditions of feeding, sanitation, and health. He then suggests that the public, sensing our neglect, has chosen to saddle us with a State service. I feel that this approach is unfair. Doctors know quite well that health comes largely from good houses built at reasonable cost, good food produced at a fair price and sold under hygienic conditions. Why should we, as a profession, be blamed for bricklayers who only lay 300 bricks a day and plumbers who are so incompetent that their pipes burst in winter? Why should we be blamed for the insane expenditure on films, greyhounds, drink, and tobacco? Why should we, who with the housewives work an eighty-hour week, be blamed by those whose contribution to the country's recovery is to work half this time? I resent very keenly the suggestion that these things are our fault. The country gets the politicians it deserves, and few of them have the courage to stress what I write here. Doctors have very little to do with health and our opinions on the matters described have been well known for years. If people will not listen it is not our fault. In conclusion many of us honestly believe that increasing interference by the State, which has neither soul to be damned nor body to be kicked, will aggravate many of our troubles. Let the plumbers and bricklayers get on with the job of promoting better health, and let their value in this matter be properly explained to them. Many houses built by the State are rotten.

Euphoriant for Depression

Dr. MARGARET A. QUINE (Torquay) writes: I wish to congratulate Dr. G. Tayleur Stockings on his able and illuminating work (June 28, p. 918) on the relief of depression through the medium of the euphorizing drug synhexyl. In this work, however, there seems to me something much more far-reaching than the empiric dose—this is the link he furnishes between mood and metabolism. Other illnesses that have a definite "affect" tone in addition to a demonstrable lesion in the brain are disseminated sclerosis, with its early facility; Kinnier Wilson's hepato-lenticular degeneration; subacute combined, with its depression; and in G.P.I. the grandiose euphoria or depression. Three at least of these are known to have frank disease or dysfunction of the liver. Is it not possible that before long we shall prove that the ancients were right in believing the liver to be the seat of the soul?

Obituary

JOHN THOMSON MACCURDY, M.A., M.D., Sc.D.

Dr. J. T. MacCurdy died on July 1 after a brief illness. For some years he had occupied the position of Lecturer in Psychopathology at Cambridge, but his standing in psychiatry rests more upon his writings and his work in the war than on his lecturing, which did not absorb much of his time. His early experience in psychiatry was obtained in Canada and the United States. In Canada he took his B.A. in biology at Toronto University in 1908, and after attending the famous courses at the Johns Hopkins University, where he proceeded M.D. in 1911, he continued his studies in Germany. He then returned to a fellowship at Johns Hopkins and later lectured at Cornell University. In the war of 1914–18 he passed from the Psychiatric Institute of New York to the American Army, in which he held the rank of captain in the Medical Corps.

He came to England in 1922 after his election to the Presidency of the American Psychopathological Association. From then Cambridge became his home, and in 1926 he became a Fellow of Corpus Christi College, where he spent most of the rest of his life. He was always an esteemed member of this College, both for his high intellectual qualities and for his social attributes, which played a large part in his interesting personality. His contributions to psychology, although not widely known, display a discriminating mind and a fine philosophical attitude towards a subject which can so easily become a happy hunting ground for the dilettante and the undiscriminating. His book *The Psychology of Emotion* broke new ground as well as sounding a firm critical note of then existing theories; although time has proved his criticisms and views were not always tenable, his honesty of purpose was transparent. He followed this later in *Common Principles in Psychology and Physiology*. He attempted to explore the no-man's-land between the two disciplines where so many acrimonious battles have been fought. In his book *Mind and Money*, published in 1933, with both daring and wit he handed economics over to the applied psychologists; and later, during the last war, his volume entitled *The Structure of Morale* exhibited a deep knowledge of current affairs and an equally shrewd insight into national character. During the war he did much work on psychological warfare, assisting Government Departments, aiding the B.B.C. in their efforts to undermine German morale, and devising tests for the R.A.F. He looked forward to a time when the Army Council would have a psychiatrist on its Board, who would influence the conduct of war not merely by suggestions but almost in framing a war policy. That he did not succeed was not his fault. While Army psychiatry achieved much in many unexpected fields, MacCurdy's hopes could not be achieved in his time. Prejudice dies hard, particularly where concepts about human behaviour are concerned.

Dr. MacCurdy was a big-framed, athletic-looking man, though giving an impression of indolence. But under his apparent façade of cynical inaction there resided a deep thinker who preferred clear concepts to therapeutic adventures. He married in 1914 Winifred, daughter of Mr. David B. Jones, of Chicago, and leaves a son and a daughter.

Dr. FRANCIS ELLIOT FOX, who died on April 27, was medical superintendent of Brislington House, Bristol, a private mental hospital which has been owned and administered by his family for several generations. His father, Dr. Bonville Fox, died when Francis Elliot was a boy, and the succession from father to son was further delayed by service in the 1914–18 war. On leaving Winchester F. E. Fox joined the Army, where he reached the rank of captain. While stationed in Persia towards the end of the war he received grave head injuries, but he made a good recovery and was able in 1919 to begin the study of medicine at Cambridge. From Caius College he went to the London Hospital and qualified in 1924. After holding a clinical assistantship at the London and a house appointment at the Bethlem Royal Hospital, he was for a time assistant medical officer at Peckham House before he returned to Bristol to take up the work for which he had trained. In 1940 he published in the *British Medical Journal* a paper describing his clinical

experience with electrically induced convulsions. A man of fine presence and kindly bearing, "Sonny" Fox (as he was affectionately called by his many friends) was capable in both professional and public affairs. He was a member of the Bristol city council and for many years chairman of the Frome Conservative and Unionist Association. His chief hobby was gardening, and at Brislington House he made a beautiful garden even more beautiful. He married in 1941 Ethel Mary Skuse, who survives him with one son.

Mr. ALFRED ERNEST MAYLARD died at his home in Peebles on June 27 at the age of 93. Mr. Maylard was well known in Glasgow, where he was associated with the Victoria Infirmary from 1890. Mr. Maylard was a student at Guy's Hospital, where he was one of the demonstrators in anatomy in the early 'eighties. He was a fellow of the Royal Faculty of Physicians and Surgeons and of the Royal Society of Edinburgh. Mr. Maylard will be remembered as a general surgeon with a particular interest in the surgery of the abdomen. On his retirement in 1919 from the post of visiting surgeon at the Victoria Infirmary he was appointed honorary consulting surgeon and elected to the board of governors. His interest in this work was actively maintained until 1933. His principal recreations were walking and mountaineering, and he was at one time president of the Scottish Mountaineering Club. He had been a member of the British Medical Association for 64 years.

We announce with regret the death at the age of 86 of Lieutenant-Colonel W. T. Frederick Davies, C.M.G., D.S.O., a former President of the South African Medical Council. William Thomas Frederick Davies received his medical education at Guy's Hospital, London. He qualified M.R.C.S. in 1882, and took the M.B.Lond. in 1883 and the B.S. in 1884, proceeding to the M.D. in 1887. He served in the South African War as Surgeon-Major to the Imperial Light Horse in 1899–1900, when he was awarded the D.S.O. He commanded the 2nd Imperial Light Horse in 1914–15 in South-West Africa and was wounded. He served in the R.A.M.C. in 1917–19, and was appointed surgeon specialist to the General Military Hospital at Colchester. Dr. Davies was Vice-President of the Witwatersrand Branch of the B.M.A. in 1921 and President of the Transvaal Medical Council in 1925. He was elected a member of the South African Medical Council in 1928. He was honorary consulting surgeon to the Johannesburg Hospital.

The death of Dr. HERBERT HENRY MILLS, after only three days of acute illness, removes one who was possibly the doyen of Kensington practitioners, for he started in practice there over fifty years ago and was at work right up to the time of his last illness. He was born at Peterborough in 1868, and after attending the grammar school in that city won a scholarship to University College School. Thence he entered the school of medicine at Westminster Hospital, and he qualified in 1891 as M.R.C.S., L.R.C.P., taking his M.D.Lond. in 1896; in his final year he had been awarded the prize in clinical medicine. He was house-physician and later assistant demonstrator in anatomy at his own hospital. Mills came into prominence at the time of the controversies aroused by the National Health Insurance Act of 1911, when his downright support of the Lloyd George scheme brought him into antagonism with the policy approved by the Representative Meeting of the B.M.A., from which body he resigned in that year after 8 years of membership; however, the animosities then aroused died down, and in 1928 he rejoined the Association. He served on the Advisory Committee created under the Act, and on the London Insurance Committee. For many years he was Medical Referee to the Prudential Assurance Company. He was a Fellow of the Medical Society of London, of which he had been a council member; and served as president of the West London Medico-Chirurgical Society in 1931–2. He married Miss Ernestine Evans Bell, who survives him, together with their only child, Dr. Hermia Mills, now working at Aylesbury.

Dr. FRANCIS MARTIN BERNARD DOUGHERTY died recently at the early age of 40. He qualified M.B., Ch.B. in Capetown in 1930, and took the B.Hy. and D.P.H. of Durham in 1938. He was senior resident medical officer of the Royal Victoria Infirmary, Newcastle-on-Tyne, and District Medical Officer of Richmond, Natal. Dr. Dougherty was also assistant medical officer of health to the Surrey County Council, a post he gave up in 1940 when he returned to South Africa to enter the Army Medical Service there. In 1943 he became second in command of No. 2 S.A. Convalescent Depot in Italy. In 1945 he resumed practice in South Africa at Howick. He is survived by his widow and one son.

Medico-Legal

RECOMMENDATION AS A MEDICINE

[FROM OUR MEDICO-LEGAL CORRESPONDENT]

By the Pharmacy and Medicines Act, 1941, if a person sells by retail any article recommended as a medicine the article or its container must be labelled with the appropriate designation and quantities of its ingredients. A "substance recommended as a medicine" may only be sold by a doctor, a dentist, an authorized seller of poisons, or a person who has served a regular apprenticeship to a registered pharmacist. It is closely defined by the Act as a substance which is referred to on the label, or on a placard in the shop, or in an advertisement, in terms which are calculated to lead to its use for the prevention or treatment of any ailment, infirmity, or injury affecting the human body, but which do not give a definite indication that the substance is intended to be used as a food or drink and not as a medicine.

Messrs. Potter and Clarke, manufacturing chemists, asked the opinion of the High Court in a friendly action against the Pharmaceutical Society on whether a specified series of common laxatives with specified labels were "substances recommended as a medicine." The label on senna pods merely gave that name and the name and address of the firm. Their cascara was labelled "Trade Mark: Winged Lion Brand. Fluid Extract of Cascara Sagrada. British Pharmacopoeia. Dose, half to one teaspoonful in half a wineglass of water." Lemon and squill linctus was merely labelled with its name and the name and address of the firm. Compound rhubarb pills also bore the name and the dose. "Effervescing Powders" was labelled "Extra strong Effervescing Powders. Prepared by Carter and Sons, Sheffield, a wartime substitute for Seidlitz Powders. Carters," with instructions for use and the manufacturer's address. The firm maintained that these medicines, so labelled, were not "substances recommended as a medicine" and so could lawfully be sold by unqualified persons. Mr. Justice Wynn-Parry held that they were right in regard to the senna pods and the linctus but not in regard to the other substances, presumably because the dosage was specified.

The firm appealed,[1] arguing that the written terms must specify the particular ailment or groups of ailments for the prevention or treatment of which the substance is appropriate. The Pharmaceutical Society argued that this was not necessary if it was common knowledge that the substance was in fact used for the prevention or treatment of a specific ailment or group of ailments. For example, the label on the cascara, though it did not mention constipation, might be nevertheless calculated to lead to the use of fluid extract of cascara sagrada for the prevention or the treatment of constipation. The same, they said, applied to the rhubarb pills and the seidlitz powder substitute: both were well-known household remedies.

The Court of Appeal held that the relevant words of the Act were neither doubtful nor ambiguous. They did not think that Parliament would have desired to make the criminal liability of a seller of medicine depend on the accuracy of his speculation concerning the exact extent to which the general public knows that a particular medicine is a remedy for a particular ailment. If the written terms contain only an accurate description of the substance it is not "recommended." To render it "recommended" its description must indicate that it is a remedy for a specified ailment. They therefore held that the three laxatives in question could, with the given labels, be sold by unqualified persons.

[1] 1947 1 All E.R. 802.

The Hebrew medical journal, *Harofé Haivri*, the first number of which appeared in 1927, celebrates its twentieth anniversary in the current number. It is published in New York and written in Hebrew and English. General articles on Jewish culture and medical terminology in Hebrew are usually included in the journal, and in addition the present number contains articles on streptomycin, anticoagulant therapy in thrombosis, and narco-analysis.

Universities and Colleges

UNIVERSITY OF LONDON

LONDON (ROYAL FREE HOSPITAL) SCHOOL OF MEDICINE FOR WOMEN

The following scholarships have been awarded for 1947-8:

Medical Exhibition: Miss M. J. R. Millar (London (Royal Free Hospital) School of Medicine for Women). *A. M. Bird Entrance Scholarship:* Miss S. Nourse (Sydenham County Secondary School). *Mrs. George M. Smith Scholarship:* Miss C. Wright (Dame Allan's Girls' School, Newcastle-upon-Tyne). *Mabel Sharman Crawford Scholarship:* Miss M. P. Mearman (Sandown County Grammar School, Isle of Wight). *McIntyre Evans Scholarship (awarded by the Clothworkers' Company):* Miss B. M. Bough (London (Royal Free Hospital) School of Medicine for Women). *Elizabeth Bolton Scholarship:* Miss C. Hartstein (London (Royal Free Hospital) School of Medicine for Women). *Dr. Margaret Todd Scholarship:* Miss J. M. Ward (London (Royal Free Hospital) School of Medicine for Women). *A. M. Bird Clinical Scholarship:* Miss M. Mitchell (London (Royal Free Hospital) School of Medicine for Women).

UNIVERSITY OF LIVERPOOL

The following candidates have been approved at the examinations indicated:

M.D.—T. C. Gray.

M.RAD.—*Part I:* H. G.Frank, A. M. Fraser, J. R. MacLeod, D. E. Paterson, I. Pierce-Williams, M. Robinson, H. L. Ross, G. D. Scarrow, W. I. Walker, J. Winter.

FINAL M.B., CH.B.—*Part III:* F. G. Anderson, I. S. J. Crosbie, E. Dewsbury, Nancy V. Dilling, W. Ellenbogen, Sheila K. Frazer, G. I. T. Griffiths, Elizabeth Howorth, A. B. Jones, F. P. Lennon, G. L. Levy, G. H. Lucas, J. E. Riding, Audrey A. Shone, G. C. Slee, M. H. Turner, L. C. Wolfman. *Part II:* C. Alexander, June P. Arnold, W. B. Ashby, D. J. B. Ashley, Barbara B. Ball, Mary F. Barrie, A. J. Bathurst, J. F. Bell, G. Bilsbarrow, L. B. Bruce, Anthea M. Bushby, C. R. Cartwright, A. Dalzell, F. J. Dunn, [2]E. C. Edwards, J. D. E. Edwards, Elspeth M. Evans, J. A. Finnigan, H. L. Goffman, T. D. H. Gray, Sylvia S. C. Hinde, C. I. Hood, C. O. le C. Hughes, Gwen E. Hughes, T. J. M. Hughes, J. Humphreys, Mair Humphreys, Dorothy M. Jennings, Elizabeth M. Johnson, C. H. Jones, [1]W. W. Jones, B. Kay, P. Kilburn, J. G. Kingan, Christine Lewis, J. F. Lynch, A. G. Mackinnon, Mary K. Marchant, G. Marsh, Margaret J. Miller, [2]Helen T. Morgan, E. G. Myerscough, J. O'Donoghue, Mary G. O'Hare, N. C. W. Owen, W. R. Parkes, [2]W. H. Parry, Leslie M. Pinkerton, [1 2]Gwyneth E. Pritchard, Enid Rees, Millicent M. C. Regan, Freda M. Roberts, [1]J. R. Roberts, [2]Kathleen M. Roby, Joyce L. Rowley, Barbara F. M. Shirley, H. M. Thomas, H. Thompson, W. K. M. C. Watkins, D. B. Wilkinson, [2]H. T. G. Williams. *Passed in Separate Subjects:* N. O. Ascroft, Gwyneth H. Kendrick, D. N. Menzies, J. N. Rimmer, and R. V. Roberts (Forensic Medicine and Toxicology). S. Plumpton (Public Health). *Part I:* Margaret Addison, A. J. Bathurst, D. U. Bloor, R. Bradshaw, K. W. Brewster, Dorothy M. Broadhurst, P. Burrows, Mary I. Charlesworth, Lily I. Chesham, J. H. Corbett, A. J. Cunningham, Beryl C. Davies, E. J. J. Davies, [4]Catherine M. Durkin, W. Ellis, O. L. Evans, G. H. Fletcher, P. H. Grace, R. I. Green, I. W. Griffith, [4]Margaret E. Hall, D. B. Hargreaves, Brenda M. Heathcote, [4]J. F. Hobson, [4]W. M. Hunter, P. Hurst, [1 4]W. B. Jennett, Margaret L. Johnson, J. L. Jones, R. E. Jones, R. H. Jones, Halina Z. Kaliniecka, J. G. Kay, J. G. Kingan, Margaret Knox, Margaret A. Lees, D. H. Lloyd, E. S. Lovgreen, Marcia McArthur, D. N. Menzies, Ethel Owens, W. R. Parry, Sheila M. Pope, Ursula C. Pope, H. Riad, J. C. Richardson, R. K. Rimmer, G. K. S. Roberts, H. U. Shaw, [3]J. P. Stanfield, Pauline R. Sullivan, J. C. Taylor, R. P. Watkins, D. L. Williams, [3]J. A. Williams. *Passed in Separate Subjects:* Betsy E. Davies, and W. A. Pollitt (Pharmacology and General Therapeutics).

[1]Distinction in forensic medicine and toxicology. [2]Distinction in public health. [3]Distinction in pathology and bacteriology. [4]Distinction in pharmacology and general therapeutics.

D.P.H.—*Part II:* L. C. Allan, G. H. Ball, T. W. Brindle, A. M. Brown, Mary F. Brownlie, W. F. Christian, D. J. Doherty, Catherine S. Ellams, D. J. Fraser, J. A. Gillet, Patricia F. M. B. Gould, M. D. Kipling, Ann Prysor-Jones, B. Pujari, K. V. Robinson, C. D. Rosenwald, K. C. Sahu, Irene W. Simpson, W. G. Taaffe, A. R. Unsworh, E. Walker, S. R. Warren, E. B. Weeks.

UNIVERSITY OF BIRMINGHAM

Thomas Lionel Hardy, M.D., F.R.C.P., has been appointed to the Chair of Gastroenterology in the Faculty of Medicine of the University. The Chair is a new one and the first of its kind in this country.

James Frederick Brailsford, M.D., F.R.C.P., F.F.R., has been appointed Honorary Director of Radiological Studies in Living Anatomy.

At a Congregation held on July 4 the following medical degrees and diplomas were conferred:

M.D.—W. M. Arnott, T. McKeown, J. M. Smellie.

CH.M.—A. B. Watson (with honours), N. O. K. Ameli.

M.B., CH.B.—J. J. Elkes, [1]M. G. FitzGerald (with second-class honours), J. W. Baker, J. B. Binks, C. W. Bird, D. G. Boyle, F. A. J. Bridgwater, Philippa H. Cadbury, A. E. Caines, A. MacD. Clark, C. P. Cotterill, G. A. Dalton, D. Darlington, C. J. C. Davey, Jean M. Evans, Sheila Fairclough, Margaret L. Fallon, G. E. Faulkner, O. P. Gray, D. A. Hanson, F. G. Isaacs, W. C. Lees, W. H. McIlveen, Beryl W. Marson, [2]F. W. Millard, A. L. Mintz, J. C. E. Pougher, L. W. Robinson, P. W. H. Robinson, Barbara Shaw, N. K. Shinton, [2]M. J. Simpkiss, [1]G. Slaney, A. J. White, Rose A. J. Whitelaw, Margaret D. Wigley, [3]Jacqueline Domenet, [3]Ruth W. Towler.

D.P.H.—Edith M. M. Alexander, Joyce M. Allen, R. J. Calvert, Frances M. Earle, H. Genter, J. R. Gibson, D. MacD. I. Harmar, A. F. Morgan, E. C. Ostler, W. R. Perry, R. G. Record, B. D. Robinson, F. A. Smith, Margaret M. Timpany. *Certificate in Public Health:* T. F. H. Duffell, F. E. Fletcher, E. Williams.

The following scholarships, etc., were awarded in the Faculty of Medicine (including the School of Dental Surgery):

Queen's Scholarship (Third Year), Peter Thompson Prize in Anatomy (Third Year), and John Barritt Melson Memorial Gold Medal (Third Year): J. T. Eayrs. *Queen's Scholarship (Fourth Year):* D. E. Wallis. *Queen's Scholarship (Fifth Year):* J. H. Morgan. *Queen's Scholarship (Final Year), Ingleby Scholarship in Obstetrics and Gynaecology, and Obstetrics and Gynaecology Prize:* M. G. FitzGerald. *Special Undergraduate Scholarships:* E. H. Ashton, Madge M. Breward, P. B. Clarke, J. T. Eayrs, H. C. White. *Bertram Windle Prize in Anatomy:* Madge M. Breward. *Leith Newman Prizes in Pathology (Fourth Year):* J. A. Ireland (Medical), J. R. Moore and Edith Crawford (Dental, divided). *Ingleby Scholarship in Paediatrics and Child Health:* A. MacD. Clark. *Arthur Foxwell Memorial Medal:* F. W. Millard. *Sampson Gamgee Memorial Medal:* M. G. FitzGerald and G. Slaney (divided). *Priestley Smith Prize in Ophthalmology:* D. Darlington. *Russell Memorial Prize:* M. J. Simpkiss. *Douglas Marsh Ear, Nose and Throat Prize:* B. D. Bower. *Lawrence Barnard Carlton Scholarship:* J. P. Pimley. *John Humphreys Memorial Prize:* J. R. Moore. *Senior Medical Prize:* D. A. Hanson. *Senior Surgical Prize:* G. Slaney. *Paediatrics and Child Health Prize:* Gwynneth J. Pearson. *Junior Surgical Prize:* R. G. Robinson.

[1]Distinction in surgery. [2]Distinction in medicine. [3]*In absentia.*

UNIVERSITY OF SHEFFIELD

Drs. V. Blackman, T. Jones, T. S. King, and J. W. Perrott have been appointed demonstrators in anatomy, and Mr. J. C. Newbold, F.R.C.S., part-time tutor in obstetrics.

UNIVERSITY OF DURHAM

The following candidates have satisfied the examiners at the examinations indicated:

M.D.—P. B. Crone, W. A. S. Falla, J. H. Middlemiss, C. Neubauer, S. G. Siddle, P. Szekely, Mary D. Taylor.

FINAL M.B., B.S.—*J. P. Anderson, *Jacqueline Elliott, A. Ashcroft, G. M. Bell, S. A. Biggart, Joan Bride, Sheila M. Cameron, D. J. Cawthorne, Lucy E. Coates, R. Cowley, L. H. Field, Peggy Foster, J. B. Fox, J. Glaser, D. L. Golightly, A. C. Griffith, W. P. Haigh, A. Hand, B. Hayes, Catherine V. Johnston, J. Josephs, A. R. Kirby, H. F. Lake, T. K. Lamballe, D. B. Leaming, Elizabeth U. Lee, M. F. Levy, F. I. Locke, K. McKay, Lorna M. McLeod, Margaret A. Nattrass, A. O. Odulate, Margaret J. Parbrook, R. T. Parr, D. Refson, A. A. Reid, M. C. Robson, A. I. Rowe, J. N. S. Simpson, Patricia M. McK. Smith, A. H. Snaith, W. E. Suffield, Sonia H. J. Sumner, Evelyn Swangren, Anastasia Swinburne, Helena C. W. Wardle, D. G. V. Whittingham.

*With second-class honours.

UNIVERSITY OF GLASGOW

At a Graduation ceremony on July 9 the following medical degrees were conferred:

M.D.—*Jean L. Buchanan, *B. Couts, *Margaret S. Ferguson, *Sheenah J. McK. Russell, *Elizabeth B. S. Scobbie, *A. B. Semple, *Sylvia J. Strachan, *A. McL. W. Thomson, J. T. Boyd, J. Caldwell, R. Hillman, W. B. McKenna, I. H. McNeil, K. Sagoe, J. F. Swan.

M.B., CH.B.—Anne S. McNaughton (with honours), *A. D. Roy, *W. P. Crane, *R. Pirrie, *W. A. J. Crane, H. M. Adam, J. Aitken, K. J. Alexander, A. C. Anderson, Joan Angus, A. S. Arneil, J. Barr, J. B. Bell, A. Boyd, H. W. Boyd, J. M. Boyd, Anne N. MacK. Brittain, J. C. Brocklehurst, I. H. Brown, James Brown, John Brown, R. W. Bryson, Margaret H. S. Calder, Margaret Cameron, M. W. Clark, J. Craig, A. S. Cullen, J. Currie, Pamela A. Davies, E. D. B. Denovan, M. B. Divertie, Irene E. Donald, Lilian I. Donald, R. Donald, A. N. Dowie, Alison M. T. Drimmie, Margaret B. Eadie, A. Fairley, W. R. Falconer, Margaret M. Ferguson, J. J. Flanigan, T. H. S. Forrest, W. T. Fullerton, Rosamund M. H. Fulton, L. A. Gillanders, W. J. Gordon, A. Guinea, Jessica M. S. Hamilton J. S. Happel, I. L. D. Hodge, J. R. R. Holms, J. G. Inglis, W. T. Irvine, D. Irwin, B. Isaacs, Agnes B. Johnstone, G. D. Kay, J. M. Kay, Teresa Keley, J. W. Kerr, Agnes F. W. Laughland, Joyce F. P. Lightbody, G. S. Macadam, I. McAlpine, H. S. McCallum, Lorna G. Macdougall, Christine R. Macgregor, Susanne M. MacGregor, I. MacIntyre, Sheila Macintyre, D. McD. McKean, B. D. McKee, D. I. MacKenzie, S. D. MacKenzie, W. McKerrell, Ella I. Mackinnon, A. MacLean, A. I. MacLeod, R. C. Macleod, J. B. McMillan, A. L. McNab, D. L. McNab, A. Macpherson, A. Mair, Helen M. Mair, D. B. Meek, J. C. Merry, J. S. Moffat, J. Morgan, Agnes A. M. Muir, A. Munn, D. B. Neilson, Marjorie G. Nisbet, Mary K. P. Pollock, F. B. Proudfoot, Helen J. G. Ramsay, D. A. Rice, Sheila C. S. Richard, A. A. Robin, T. Russell, W. I. Russell, G. Sclare, Alison Shannon, J. Simpson, J. T. Smith, J. Stanners, Isobel M. W. Stark, J. Stewart, Margaret P. Stewart, R. Strang, A. McM. P. Thomson, D. H. Thomson, W. O. Thomson, W. Todd, D. Turnbull, A. Urquhart, W. B. Waddell, Joan L. Wakeham, Mary C. Wallace, Camilla M. Walton, J. A. Watson, A. A. Wilson, T. A. Wilson, C. M. Wylie, F. O'N. Young, Mary A. C. Young.

*With commendation.

The following prizes and medals were awarded: *Brunton Memorial Prize, West of Scotland R.A.M.C. Memorial Prize, and John W. Weir Prize:* Anne S. McNaughton, M.B., Ch.B. *Macewen Medal in Surgery:* D. H. Sproull, M.B., Ch.B. *Stockman Medal:* A. D. Roy, M.B., Ch.B.

UNIVERSITY OF ST. ANDREWS

The following candidates have been approved at the examinations indicated:

M.D.—H. H. A. Elder, D. C. Sinclair (with honours).

M.B., CH.B.—*J. D. Andrew, *Margaret M. Downes, *D. M. Green, *Margaret Lamb, *J. M. McGilchrist, *E. C. Mathieson, *Jessie M. B. Muirhead, *R. J. A. Nicol, *J. A. Reid, *Margaret W. Richardson, *W. B. Robertson, *C. E. G. Smith, *G. R. Tudhope, Mary Auld, Mona A. Barron, Christine Benson, W. S. Bowman, Ruth Brogden, J. F. Butchart, G. S. Caithness, Diana Campion, Gillian Crow, A. L. M. Davidson, Margaret B. Dempster, K. P. Duncan, A. Ewing, A. D. Forrest, J. P. Fraser, J. A. Freeman, J. L. Hamilton, A. P. B. Harston, Margaret J. Jackson, Olive M. Landsman, A. G. R. Law, J. S. M. Low, Sheila McCall, R. H. A. MacGranthin, D. McLauchlan, Margaret C. MacLeod, R. K. Machell, A. B. Mann, Helen S. Mathewson, D. R. S. Ritch, I. K. Sharp, Ada H. Shepherd, W. Shepherd, Isobel M. Soutar, O. H. Taylor, A. C. Traill, Elizabeth White, Nora P. Woods.

*With commendation.

Medical Notes in Parliament

Penicillin

On July 7 the House of Lords agreed to the Commons' amendments to the Penicillin Bill.

Noxious Fumes

On July 8 Mr. SOMERVILLE HASTINGS asked the Minister of Town and Country Planning when he expected to be able to report the result of his investigations into the elimination of harmful and unpleasant products from the gases produced by oil-fired furnaces.

In replying Mr. SILKIN recalled that a month previously he said he was satisfied from advice received that sulphur and other noxious fumes could be eliminated, but that to ensure that the design of the necessary plant was satisfactory a pilot gas-washing plant was to be constructed. This plant had now been designed. Construction would take six months to complete. The results of this experiment should be available in about a year.

Ministry of National Insurance Posts

Mr. JAMES GRIFFITHS announced on July 8 that an invitation to apply for posts in the Ministry of National Insurance would, he hoped, be issued within the next fortnight to all full-time approved society staffs wholly or mainly engaged on National Health Insurance work. There would, however, be vacancies in his Department for others with suitable experience. He expected to be ready to advertise in the early autumn for applications from such persons.

Merging Service Medical Branches

Cmdr. NOBLE on July 9 asked the Minister of Defence what progress had been made towards merging the three Service medical branches.

Mr. ALEXANDER, in reply, said this question was still under examination. It had not yet been established that the complete merger of the three medical services was to be preferred to the alternative of the maximum degree of co-ordination between those services.

Col. STODDART-SCOTT asserted that the merger of these services would result in great economy in military manpower. He asked Mr. Alexander also to consider the merging of the three nursing services.

Mr. Alexander said that he himself and the other Departments which had examined the subject had so far not been convinced of the economies to be achieved. The matter, as he had already said, was still under consideration.

Regional Hospital Boards

Col. STODDART-SCOTT on July 9 asked the Prime Minister to set up a Select Committee to consider the effect on the hospital services of the appointment to regional hospital boards of M.P.s from one side only of the House of Commons, although members of other parties had similar qualifications in hospital work, administration, and management.

Mr. ATTLEE replied that he repudiated the suggestion that these appointments were political. He said that examination of the boards' membership would prove that persons with suitable experience had been chosen without any shadow of political exclusiveness. The question of setting up a Select Committee therefore did not arise.

Col. Stoddart-Scott said that four members of the Commons, all of Mr. Attlee's Party, and four members of the House of Lords, none of whom was a Conservative, had been chosen to sit on these boards. Such political appointments, he predicted, would make changes in the hospital boards inevitable after the next general election and would be to the detriment of the hospital service.

Mr. Attlee then said that Col. Stoddart-Scott's facts were not correct. He believed that on these boards were five M.P.s from the Government side of the House. From the House of Lords there were Lord Cunliffe, the Earl of Cranbrook, and Lord Henley, who were certainly not members of the Labour Party. There was also Lord Eustace Percy, an eminent Conservative. It was unjustifiable to complain that, after so many years, some Labour people were appointed to these various boards.

Sir HENRY MORRIS-JONES asserted that some of the names on these boards, particularly in North Wales, had been received with perplexity. He asked why the names of well-known people who had given their lives to hospital service were omitted.

Mr. Attlee suggested that perhaps they were too old.

Mr. GORONWY ROBERTS asked on July 10 what was the procedure followed in appointing regional hospital boards; and whether Mr. Bevan was satisfied that an adequate proportion of suitable women representatives were being appointed to these boards.

Mr. BEVAN replied that the boards had been appointed after consulting all the principal organizations and bodies concerned. The object had been to select the persons of best experience and qualification for the task, not representatives as such. However, the answer to the latter part of the question was in the affirmative.

Mr. GORONWY ROBERTS asked on July 10 how many appointments had been made to the Welsh Regional Hospitals Board; whether this number was fixed; and what procedure would be followed in filling casual vacancies.

Mr. BEVAN answered that a chairman and 31 other members had been appointed in accordance with the constitution laid down in the National Health Service (Constitution of Regional Hospital Boards) Order of June 24. Casual vacancies would be filled by the Minister of Health after consultation with the board and with any other bodies which appeared to be concerned.

Major LEGGE-BOURKE inquired why, in view of there being two isolation hospitals and two general hospitals in the Isle of Ely, no member from the Isle of Ely had been appointed to serve on the East Anglian Regional Hospital Board.

Mr. BEVAN replied that though every effort had been made to secure a reasonable balance of local knowledge on this and other boards, they were not intended to be constituted on a basis representative of particular areas or interests.

Temporary Registration

On July 10 Mr. JANNER asked the Minister of Health what was to be done to assist doctors and pharmacists with foreign qualifications who were on the temporary *Register* and who would be unable to continue to practise when temporary registration came to an end in December next.

Mr. BEVAN announced that the Government would seek the approval of Parliament to legislate on this subject. It intended to introduce a Bill before the end of the session, although it could not be passed during the session, in order to make the detailed proposals fully known as soon as possible. He hoped there would be general agreement with them.

Calf Lymph

A question put by Mr. HOBSON on July 10 asked whether the lymph used in vaccination against smallpox was still manufactured in the skins of animals; and whether the calves used for the production of lymph at the Lister Institute were slaughtered before the lymph was extracted.

Mr. BEVAN said that the answer to both parts of the question was "Yes," except that sheep and not calves were used by the Institute.

Nutrition.—The proportion of school children examined in England and Wales whose nutritional state was classified as bad was 0.5% in 1939 and 0.3% in 1943 and 1945. The figure for 1946 is not available.

Milk for Schools.—At the end of last year 93.8% of the school milk to grant-aided schools was heat-treated or tuberculin-tested. Where neither of these types is at present supplied the Ministry of Food is endeavouring to arrange, in co-operation with medical officers of health, that they shall be.

Double Day Shifts.—Mr. Isaacs stated recently that the Government was not satisfied that it was necessary to retain in full the present legal obstacles to adoption of the double day-shift system, provided that proper protection was afforded for the health and welfare of persons employed on that system.

Additional Bread.—Mr. Strachey regretted that he could not extend to hospital cleaners or workers with similar duties the additional bread ration coupons to which nurses were already entitled.

Disabled Unemployed.—A count is taken each month of the number of disabled persons recorded at employment exchanges as unemployed. On May 19 last the number was 64,754. Special steps are taken to put disabled applicants in touch with suitable employment or to give them vocational training if that is required. For the severely disabled special provision is made by the Factories of the Disabled Persons Employment Corporation.

Financial Benefits.—In framing the National Assistance Bill Mr. James Griffiths will consider sympathetically the inclusion of a provision that financial help to be given in respect of any disease, over and above the benefits payable under the National Insurance Act, shall not be confined solely to cases where recovery is probable.

No. 26

INFECTIOUS DISEASES AND VITAL STATISTICS

We print below a summary of Infectious Diseases and Vital Statistics in the British Isles during the week ended June 28.

Figures of Principal Notifiable Diseases for the week and those for the corresponding week last year, for: (a) England and Wales (London included). (b) London (administrative county). (c) Scotland. (d) Eire. (e) Northern Ireland.

Figures of Births and Deaths, and of Deaths recorded under each infectious disease, are for: (a) The 126 great towns in England and Wales (including London). (b) London (administrative county). (c) The 16 principal towns in Scotland. (d) The 13 principal towns in Eire. (e) The 10 principal towns in Northern Ireland.

A dash — denotes no cases; a blank space denotes disease not notifiable or no return available.

Disease	1947 (a)	(b)	(c)	(d)	(e)	1946 (Corresponding Week) (a)	(b)	(c)	(d)	(e)
Cerebrospinal fever	57	8	24	1	—	39	2	25	1	2
Deaths		—	—				2	1		
Diphtheria	182	15	47	31	5	313	29	75	29	10
Deaths	—	—	—	—	—	2	1	1	—	—
Dysentery	66	7	14	—	—	123	15	33	7	—
Deaths				—	—				—	—
Encephalitis lethargica, acute	2	1	—	—	—	3	1	—	—	—
Deaths		—					—			
Erysipelas			31	7	—			32	7	5
Deaths		—					—			
Infective enteritis or diarrhoea under 2 years				56					47	
Deaths	76	3	18	4	4	42	6	9	9	2
Measles*	9,377	439	104	142	8	4,177	866	487	32	25
Deaths	7	—	—	—	—	1	1	1	—	—
Ophthalmia neonatorum	62	6	12	—	1	70	7	22	—	—
Deaths										
Paratyphoid fever	10	—	1 (B)	1 (A)	—	9	1	5 (B)	—	—
Deaths	—	—	—	—	—	—	—	—	—	—
Pneumonia, influenzal	342	20	3	—	3	440	24	4	—	2
Deaths (from influenza)†	7	1	—	—	—	5	—	—	—	—
Pneumonia, primary			155	5				164	21	
Deaths		27		8	8		26		1	7
Polio-encephalitis, acute	11	2				—	—			
Deaths		1					—			
Poliomyelitis, acute	56	5	5	5	2	8	1	1	2	—
Deaths		—					—			
Puerperal fever		3	13		—		4	15		—
Deaths										
Puerperal pyrexia‡	94	10	12	—	2	125	8	15	1	—
Deaths		1					1			
Relapsing fever	—	—			—	—	—			—
Deaths										
Scarlet fever	947	69	110	25	38	1,063	100	159	23	24
Deaths	—	—	—	—	—	—	—	—	—	—
Smallpox	2	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Typhoid fever	10	—	1	5	7	6	—	2	4	—
Deaths	—	—	—	—	—	—	—	—	—	—
Typhus fever	—	—	—	—	—	—	—	—	—	—
Deaths				—	—				—	—
Whooping-cough*	2,052	188	78	73	5	2,073	157	64	38	18
Deaths	9	4	3	—	1	7	1	1	1	1
Deaths (0–1 year)	365	56	65	22	10	385	48	47	37	16
Infant mortality rate (per 1,000 live births)										
Deaths (excluding still-births)	3,982	657	562	140	122	4,136	626	574	183	103
Annual death rate (per 1,000 persons living)			11·7	8·8				12·6	11·7	
Live births	9,012	1404	1096	459	265	8,777	1390	1004	468	280
Annual rate per 1,000 persons living			22·1	29·0				20·2	30·0	
Stillbirths	272	27	30			276	37	46		
Rate per 1,000 total births (including stillborn)			27					44		

* Measles and whooping-cough are not notifiable in Scotland, and the returns are therefore an approximation only.

† Includes primary form for England and Wales, London (administrative county), and Northern Ireland.

‡ Includes puerperal fever for England and Wales and Eire.

EPIDEMIOLOGICAL NOTES

Smallpox

At Bilston M.B. the diagnosis in a boy aged 10 removed on July 3 has now been confirmed. Modified rash appeared on July 2. He had been vaccinated for the first time on June 23. Contacts are still under surveillance.

The first case at Willenhall U.D., adjacent to Bilston, was removed on July 9. She is aged 19 and unvaccinated. She sickened on July 3 and a confluent rash appeared on July 6. Numerous contacts are under surveillance.

At Barnsley C.B. the daughter and son-in-law of the 62-year-old woman admitted to the smallpox hospital on June 30 were removed on July 11, when smallpox rashes appeared. Both had been vaccinated on July 2, one primarily and the other after an interval of 30 years.

The suspected case removed from the *Carnarvon Castle* on her arrival at Southampton on July 8 is suffering from chicken-pox. There is no smallpox in Southampton.

Up to July 12 there had been 10 cases of smallpox in two generations in Calais, and one in Lille secondary to the focus in Calais.

Anterior Poliomyelitis

The Registrar-General's returns for the week ending July 5 record 79 notifications (9 in corresponding week of 1946). This figure has been exceeded on only very few occasions since the disease became notifiable in 1912. The maximum recorded incidence was in 1938 (1,489 cases), and in the first 27 weeks of that year 127 cases were notified. The figures for the corresponding periods of 1946 and 1947 have been 206 and 435 respectively (uncorrected).

The disease is widely spread. Notifications in the week ending July 5 were received in 65 sanitary districts and were mainly singletons. However, since July 5 multiple cases have been reported from several districts. An unprecedented prevalence is to be expected.

Acute onsets with marked meningeal reactions leading to a diagnosis of meningitis or meningo-encephalitis appear to have been a feature in the present outbreak. In such cases the pre-paralytic stage lasts some days, and it may be presumed that infectivity is greatest in this period. Early isolation on suspicion before there is any evidence of paralysis is probably the most effective action towards preventing the spread of the disease. Bulbar and respiratory paralysis are unduly frequent, and respirators are in demand.

In one extra-metropolitan borough 7 children have been admitted to the isolation hospital since June 18, 5 of them in the first eleven days of July. Two required treatment in respirators. Tonsillectomy was performed on one of them, aged 4, fourteen days before paralysis of the bulbar type appeared. It has been advised that when poliomyelitis is prevalent nose and throat operations should be postponed whenever possible.

Cerebrospinal Fever

A rise in cerebrospinal fever notifications contrary to the expected seasonal decline may be an expression of the increased incidence of anterior poliomyelitis with marked meningeal signs at onset. The figures for the week ending July 5 were 64.

Bubonic Plague in East Prussia

A report has been received that epidemic bubonic plague appeared in Königsberg during June and has inflicted an extremely serious mortality among the civilian population.

Food-poisoning

An outbreak of food-poisoning caused by *Salmonella typhimurium* has occurred at Lincoln. Thirty-three cases have been reported, including one death. The faeces of 16 were examined; the organism was demonstrated in 15. Infection occurred from some salami sausage served at a dinner at which 77 people sat down on July 5. Investigations into the source of the contamination are proceeding.

Nine cases of typhoid are reported at Rattlesden, Suffolk. Three households are involved. Two further suspected cases are under observation. The source of the infection was contaminated lettuces from a local supply. The probable carrier is being investigated.

Nine cases of food poisoning have been reported from Winchester, and further suspected cases are being investigated. The causative organism is one of the salmonella group.

Typhus in London

A case of murine typhus is reported from Bermondsey, London. The patient, who has now recovered, was a man

employed in unpacking crates of eggs from Poland. Flea-bites were discovered on his body. He had never been abroad. There have been no further cases.

Discussion of Table

In *England and Wales* there was a decreased incidence of measles 1,255, whooping-cough 55, diphtheria 38, and an increased incidence of scarlet fever 77, dysentery 19, cerebrospinal fever 18, and poliomyelitis 12.

Large decreases in the notifications of measles were reported from London 198, Kent 171, Essex 148, Staffordshire 132, Derbyshire 117, while the only increase of any size was that in Yorkshire West Riding 71. No large variations from the total of the preceding weeks were recorded in the local returns of scarlet fever. The only changes of any size in the local incidence of whooping-cough were decreases in London 88, and Lancashire 41. The chief feature of the diphtheria returns was a decrease in Lancashire of 12 cases and in London of 9.

A new outbreak of dysentery was reported from Surrey, where the number of cases rose from 0 to 28, the chief centre of infection being Leatherhead U.D., where 21 cases were notified.

The two cases of smallpox were notified from Staffordshire, Bilston M.B. 1 and Willenhall U.D. 1. Another death, the fifth, from smallpox has been recorded at Bilston; the latest victim was an unvaccinated boy aged seven.

The number of cases of cerebrospinal fever notified rose after declining for three weeks; the 57 notifications involved 20 counties. For the fourth consecutive week an increase was reported in the notifications of acute poliomyelitis; the 56 cases were distributed through 18 counties.

In *Scotland* only small changes occurred in the incidence of infectious diseases with the exception of acute primary pneumonia, cases of which decreased by 34. In the eastern area the notifications of diphtheria increased from 2 to 9.

In *Northern Ireland* there were decreases of measles 18 and whooping-cough 10.

In *Eire* the notifications of diarrhoea and enteritis increased by 17; 46 of the 56 cases were reported from Dublin C.B. Increased notifications were also recorded for whooping-cough 19 and diphtheria 7. The rise in whooping-cough was mainly due to an outbreak in Mayo, Claremorris R.D.

Infectious Diseases During the Half-year

The returns of the infectious diseases for the first half of 1947 show that, generally, the incidence was below the average. The notifications of diphtheria were the lowest ever recorded and were less than half of the number in the corresponding period of last year. The notifications of scarlet fever have shown a progressive decline and were only about half of the total for four years earlier. Cerebrospinal fever was more prevalent, and more cases were notified than in the preceding three half-years. The total incidence of dysentery cases was slightly more than one-quarter of the preceding half-year. The notifications for the first six months of 1943–7 in England and Wales were:

	1943	1944	1945	1946	1947
Scarlet fever	50,544	48,654	36,302	30,910	27,423
Whooping-cough	50,302	56,488	33,687	45,592	53,791
Diphtheria	19,154	15,978	12,032	10,882	5,393
Measles	347,687	52,622	412,843	59,818	302,299
Acute pneumonia	28,442	24,499	21,472	24,078	22,555
Cerebrospinal fever	2,203	1,851	1,691	1,662	1,959
Dysentery	3,002	5,669	10,006	6,703	1,763
Typhoid and paratyphoid	358	247	259	250	248
Great towns:					
No. of births	169,924	186,651	174,276	206,638	259,060
No. of deaths	124,090	128,656	132,693	138,955	154,657
Infant mortality	59	54	58	51	52
Case fatality per cent:					
Scarlet fever	0·16	0·15	0·17	0·10	0·12
Whooping-cough	1·25	1·21	1·33	0·90	1·37
Diphtheria	4·2	3·0	2·7	2·6	2·0
Measles	0·25	0·14	0·19	0·17	0·21

A large increase occurred in the number of births and deaths during the first half of 1947 in the great towns compared with the experience of preceding years. Not only has the incidence of diphtheria decreased but an improvement has also been recorded in the case fatality.

Week Ending July 5

The notifications of infectious diseases in England and Wales during the week included: scarlet fever 966, whooping-cough 2,240, diphtheria 188, measles 10,269, acute pneumonia 353, cerebrospinal fever 64, acute poliomyelitis 79, dysentery 57, smallpox 3, paratyphoid 8, typhoid 15.

Medical News

Assistant Editor, B.M.J.

An advertisement appears in this issue for a Medical Assistant Editor to the *British Medical Journal*. The salary scale is £1,000 to £1,875 a year. The appointment may attract those who combine with literary or journalistic ability an interest in medical science. There is no prescribed age limit, and youth should not deter anyone from putting in an application.

Vitamin Tablets for Mothers

From Aug. 1 every mother will be entitled to free vitamin A and D tablets for 30 weeks after the birth of her child at the rate of one packet each 6 weeks. She will receive coupons for the tablets when she notifies the food office of the birth. The tablets will be distributed through the food offices and maternity and child welfare centres. Mothers with babies under 30 weeks old on Aug. 1 should apply to their local food office, taking their own and their babies' ration books with them.

Oliver Memorial Fund

The trustees of the Oliver Memorial Fund will make their first award of £50 to a British subject whose original work is considered to have made the most notable contribution to the subject of blood transfusion in the last five years. The committee welcomes applications, or information drawing their attention to suitable candidates. Correspondence, with a brief summary of such work, should be sent to F. W. Mills, Esq., National Provincial Bank, Ltd., Holborn Circus, London, E.C.1, before Oct. 1.

Dr. Jessie Macgregor Prize

The Dr. Jessie Macgregor Prize in Medical Science will be awarded to the applicant who presents the best record of original work in the science of medicine, published or unpublished, but which must not have been published earlier than three years prior to July, 1947. The value of the prize is about £50, and it is open to medical women who are graduates in medicine of the University of Edinburgh, or who have taken the Scottish triple qualification, and who, before becoming qualified, have studied medicine for at least one year in Edinburgh. The successful applicant shall, within six months following the award, deliver a lecture to the medical profession in Edinburgh on the subject of the work for which the prize has been awarded, such lecture to be entitled "The Dr. Jessie Macgregor Lecture." Applications, marked "Dr. Jessie Macgregor Prize," must reach the convener of trustees, 9, Queen Street, Edinburgh, 2, not later than July 31.

War Memorial Fund

The British Empire Nurses War Memorial Fund now stands at £45,791, £37,400 of which has been contributed by the nurses of the Commonwealth and Empire. At a meeting held in February the gift of two travelling scholarships to the value of £350–£375 was announced, one from the Royal College of Physicians, through Lord Moran, the other from Viscountess Mountbatten of Burma. The Fund held a garden party at St. James's Palace on July 8 to pay tribute to the nurses and midwives for the part they played in the war and for their generous help to the Fund.

Wills

Lieut.-Col. John du Plessis Langrishe, formerly lecturer in the Public Health Department of Edinburgh University, who died on Feb. 28, left £3,428 5s. 3d.

COMING EVENTS

Residential Summer Schools

The Central Council for Health Education will hold residential summer schools at Keble College, Oxford, from July 25 to Aug. 1, at an inclusive cost of £16 16s., and at Bede College, Durham, from Aug. 20 to Sept. 3, at an inclusive cost of £14 14s. Particulars may be obtained from the Medical Adviser and Secretary, Central Council for Health Education, Tavistock House, Tavistock Square, London, W.C.1.

Cystine and Protein Reaction

A meeting of the Polarographic Discussion Panel of the Society of Public Analysts and Other Analytical Chemists will be held at 3 p.m. on July 25 in the Chemistry Department, University College, Gower Street, London, W.C.1. Dr. R. Brdicka will deliver a lecture, of interest to medical men, on analytical applications of the cystine and protein reaction in biochemistry and medicine. Prof. J. Heyrovsky will discuss "New trends of polarographic analysis, differential and oscilloscopic."

Banting Memorial Lecture

Prof. Charles Best, F.R.S., will deliver the Banting Memorial Lecture under the auspices of the Diabetic Association on Friday, July 18, at 10.30 a.m. in the Medical School, King's College Hospital. The lecture will be followed by other lectures and demonstrations on the treatment of diabetes, on Friday afternoon, July 18, and Saturday morning, July 19. Medical men and students are invited to attend.

Venereal Disease in N.H.S.

The annual general meeting of the Medical Society for the Study of Venereal Diseases will be held at 11, Chandos Street, London, W., on Saturday, July 26, at 3 p.m., when a discussion on "Venereal Disease in the National Health Scheme" will be opened by Col. L. W. Harrison.

Colour Vision

The Colour Group of the Physical Society announces that a Conference on Colour Vision will be held at Cambridge from July 28 to Aug. 2. The provisional programme includes the following papers: Prof. S. L. Polyak (Chicago), "Retinal Structure and Colour Vision"; Prof. R. Granit (Stockholm), "Electrophysiology of the Retina"; Dr. D. L. McAdam (Rochester, N.Y.), "Colour and Brightness Discrimination"; Dr. W. S. Stiles (Teddington), "Fundamental Sensation Curves"; Dr. D. B. Judd (Washington), "Colour Blindness"; and a contribution by Prof. S. Hecht (New York). Further information may be obtained from Dr. E. N. Willmer, Physiological Laboratory, Cambridge, to whom all applications for tickets should be addressed.

SOCIETIES AND LECTURES

ROYAL COLLEGE OF SURGEONS OF ENGLAND, Lincoln's Inn Fields, W.C.—Thursday, July 24, 6.15 p.m. Charles Tomes Lecture by Prof. E. Sprawson: Foods and Feeding as they Affect Teeth and their Environment.

KENT PAEDIATRIC SOCIETY.—At County Hospital, Farnborough, Saturday, July 26, 3 p.m. Prof. Lionel Penrose: Genetics in Relation to Paediatrics.

MEDICAL ART SOCIETY.—Exhibition at Royal Society of Medicine, 1, Wimpole Street, London, W., Thursday, July 17, to Saturday, July 26.

POSTGRADUATE DIARY

FELLOWSHIP OF MEDICINE, 1, Wimpole Street, London, W.—*Royal Hospital, Richmond, Surrey:* Saturday, July 26, 9 a.m. to 5.30 p.m. One day course on the Diagnosis and Treatment of Varicose Veins. Open only to those holding Surgical Appointments. *Dreadnought Hospital, Greenwich, S.E.:* Saturday and Sunday, July 26 and 27. All-day week-end course in Medicine and Surgery.

INSTITUTE OF LARYNGOLOGY AND OTOLOGY, 330, Gray's Inn Road, London, W.C.—Monday, July 21, 4.30 p.m. Mr. W. M. Mollison: The Nose, Nasopharynx and Paranasal Sinuses.

The Fellowship of Medicine announces: (1) A week-end course on chronic rheumatic diseases to be given at the Rheumatic Unit, St. Stephens Hospital, Fulham Road, S.W., on Saturday and Sunday, October 25 and 26. (2) A course of lectures on Anatomy, Physiology, Pathology, Bacteriology, and Pharmacology, for Primary F.R.C.S. candidates, to be given at the Lecture Room of the Royal Cancer Hospital, Fulham Road, S.W., on Mondays, Wednesdays and Fridays, from August 18 to October 24. All particulars from the Fellowship of Medicine, 1, Wimpole Street, London, W.

BIRTHS, MARRIAGES, AND DEATHS

The charge for an insertion under this head is 10s. 6d. *for* 18 *words or less. Extra words* 3s. 6d. *for each six or less. Payment should be forwarded with the notice, authenticated by the name and permanent address of the sender, and should reach the Advertisement Manager not later than first post Monday morning.*

BIRTHS

CONDIE.—On June 1, 1947, at Perth Royal Infirmary, to Martha Rennie (*née* Scott), wife of Dr. William Hall Condie, M.B., Ch.B., Schoolhouse, Kinfauns, Perth, a son. Both well.

HILL.—On July 4, 1947, at Dublin, to Dr. Nancy Hill (*née* Hinchcliff), wife of Dr. William J. C. Hill, Duncreggan, Portrush, Northern Ireland, a daughter—Valerie Elizabeth.

MACARTNEY.—On July 7, 1947, at Crumpsall Hospital, Manchester, to Joyce (*née* Worthington), wife of Dr. Donald W. Macartney, a son.

TAIT.—On July 3, 1947, at Chesterfield, to the wife of Dr. A. P. Tait, a daughter.

TAYLOR.—On July 8, 1947, at Kirrier Nursing Home, Arbroath, to Dr. and Mrs. Taylor (Peggy Reid), Hyde Park House, Arbroath—a daughter.

DEATHS

ARMSTRONG.—On June 23, 1947, at 11, Sefton Drive, Liverpool, 8, Hubert Armstrong, M.D.

BAKER.—On July 8, 1947, Helen Baker, M.D., D.P.M., wife of John Peterson, University House, Bethnal Green.

HARMER.—On June 25, 1947, suddenly, at George, South Africa, John Daniel Harmer, O.B.E., F.R.C.S.Ed., beloved husband of Marjorie Harmer, of Longford, Kingswear, Devon.

O'MEARA.—On May 18, 1947, at Luton, Beds, Dr. Hubert O'Meara, M.B., B.S.Lond.

Any Questions ?

Correspondents should give their names and addresses (not for publication) and include all relevant details in their questions, which should be typed. We publish here a selection of those questions and answers which seem to be of general interest.

Poliomyelitis and Water

Q.—*Is there any foundation for this statement recently published in a lay paper: "Current medical opinion is that acute anterior poliomyelitis is spread by contaminated water and the recent incidence is a result of the rise in level of ground water owing to heavy rains and the consequent pollution of unprotected water supplies by the virus"? An annotation in the British Medical Journal last year said that since the virus was demonstrated in faeces in 1940 it had focused attention on the importance of the four F's in its spread; but it did not stress the importance of water.*

A.—There is no foundation for the suggestion that the recent occurrence of poliomyelitis is due to a rise in the level of ground water, since this infection has its greatest incidence in the autumn, when ground-water levels are ordinarily low. However, the virus of poliomyelitis is present in the faeces of typical and abortive cases during the acute and convalescent stages of the infection, and it has been recovered from the sewage of towns at the time when cases were occurring in that area. Some outbreaks have also shown a geographical relationship to water courses, so that the possibility that water from sewage-contaminated rivers and swimming-pools may be a vehicle for the spread of the virus cannot be gainsaid. When a case has occurred in a household, therefore, all the necessary precautions should be taken to prevent the spread of infection to food or drink by contaminated hands or flies. At the same time, there is a considerable body of evidence that infection is most often spread by direct contact, which may mean that droplets from the upper respiratory tract may also spread the disease. The virus can be demonstrated in the oropharynx during the acute stage, and it has lately been recovered from the throats of school-children in contact with a case. A high standard of personal hygiene in a household or semi-closed community where infection has appeared is therefore the most likely means of controlling spread of poliomyelitis.

Vaccination against Smallpox

Q.—*What should be the frequency of vaccination in areas where smallpox is endemic? What interpretation as to the subject's immunity is to be given to the so-called "immune response"—that is, a fleeting papule appearing 48 to 72 hours after immunization?*

A.—Revaccination every 10 to 12 months should be carried out in areas where smallpox is endemic. A fleeting papule 48 to 72 hours after vaccination with vaccine lymph merely indicates a previous contact with the antigen and may occur with dead virus. Thus it is probably only a "sensitivity" reaction and not an indication of immunity. It is considered safest to record "successful vaccination" only when a vesicle appears. It is interesting to note in this connexion that vaccination by the multiple pressure method has recently resulted in good takes in numerous individuals who had several unsuccessful vaccinations by the usual scratch method.

Lisping

Q.—*A boy aged 6, of normal intelligence, has lisped since learning to speak. Should an effort be made to correct the defect now, or should it be left to right itself?*

A.—In lisping (or dyslalia) there is a persistent impairment of enunciation of one or more consonants. Its causes and degree vary considerably. In this case local causes, such as a shortened fraenum linguae or a malformed palate, should be sought and treated, together with any other pathological states of the nose and throat not obviously connected with the trouble. If dyslalia persists after this, or if no such causes are found, treatment by a speech therapist should be given if

the defect is marked or if the child moves in an environment where clarity of speech is not observed. Children with mild lisps moving among clear speakers tend to recover without treatment.

Orchitis after Mumps

Q.—*As the result of severe orchitis following mumps a 52-year-old patient has become impotent. I have been giving him methyl testosterone sublingually, pushed to 45 mg. a day, without result. Can anything more be done?*

A.—Orchitis following mumps is an important cause of impotence, so much so that in the case of bilateral orchitis it is advocated that an incision of the capsule of the testis on one side should be made to relieve compression tension. If the procedure is carried out on both sides, and the attempt fails to prevent destruction of the interstitial cells, the surgeon might wrongly be blamed. The condition should have responded to the treatment given, but it may be that larger doses are required initially—for example, the injection of 25 mg. of testosterone daily. An alternative therapy is the subcutaneous implantation of 800 mg. of testosterone propionate.

Oxygen Inhalation

Q.—*I have been told that the B.L.B. mask, under ideal conditions in a healthy subject, can produce an alveolar oxygen concentration of 96%. I believe there is also experimental evidence that concentrations of oxygen much above 60% cannot be breathed for more than a few hours without ill effects, such as pulmonary congestion and oedema. Are there any conditions in which oxygen would appear necessary but, given in this way, could be dangerous?*

A.—Inhalation of oxygen at a pressure of one atmosphere is said to produce symptoms of lung irritation in normal young men after about fourteen hours' exposure. The subjects complain of cough, sore throat, nasal congestion, and substernal pain. At or below concentrations of 60% the inhalation of oxygen is apparently harmless, but there is not complete agreement among clinical workers on this point. Actually it is difficult to get an alveolar oxygen concentration of anywhere near 95% with the usual type of B.L.B. mask unless all the ports can be closed, the mask is well fitted, and mouth-breathing prevented. The nasal mask may deliver from 40 to 95% oxygen according to circumstances. In general, oxygen is necessary to combat arterial anoxaemia or to hyperoxygenate the blood—that is, to carry oxygen in solution as well as combined with haemoglobin. It is probable that 100% oxygen can be safely given for short periods to all patients, but if it is necessary to continue for longer than twelve hours then the concentration should not exceed 50 to 60%, provided this is sufficient to oxygenate fully the arterial blood. If it is not, then the risk of continued anoxia must be balanced against that of a tracheo-bronchitis due to the use of oxygen.

"Dyspeptic" Ulcers

Q.—*What is the best treatment for a woman of 50 who suffers from periodical crops of small ulcers on the inside of her cheeks? She has no dyspeptic symptoms.*

A.—So-called dyspeptic ulcers which appear in crops on the buccal mucous membrane are usually quite unconnected with dyspepsia, and the term is a misnomer. Bacteriological investigation, while often showing mixed oral types with no predominating organism, often reveals pneumococci and haemolytic streptococci. Apart from general measures, and vitamins A, B, etc., to ensure that the mucous membrane is in a healthy state, local measures should include general oral hygiene. The administration of penicillin in pastille form, which appears in some cases to get rid of the infection (MacGregor and Long, *Journal*, 1944, **2**, 686), is worth a trial.

Diphtheria and Vitamin B

Q.—*Is there any evidence that any of the B vitamins are useful in the treatment of the cardiac debility and paresis caused by diphtheria toxin?*

A.—There is no controlled evidence that any member of the vitamin B complex has a beneficial prophylactic or therapeutic effect on diphtheritic paralysis or on the cardiovascular complications of diphtheria (see this *Journal*, 1941, **1**, 359). The administration of such vitamins in a debilitated patient may, however, produce a sense of well-being.

Dehydrocholic Acid

Q.—*What is known about the therapeutic action of dehydrocholic acid?*

A.—Dehydrocholic acid is useful for its ability to increase the volume of the bile. It does not stimulate evacuation of the gall-bladder, but it may be of value to remove mucus and debris from the bile ducts. A copious flow of bile may flush the ducts but does not necessarily affect the gall-bladder. Dehydrocholic acid is contraindicated in complete mechanical biliary obstruction. The dose is 0.25 to 0.5 g. two or three times daily after meals for a period of four to six weeks.

Metal-fume Fever

Q.—*Oxy-acetylene welders who inhale zinc oxide fumes sometimes develop an ague characterized by sickness, general malaise, joint pains, and signs of general toxaemia. Is milk a good antidote?*

A.—When galvanized metal is being welded the fume may contain zinc oxide, and unless the inhalation of this fume is prevented "metal-fume fever" with the characteristics described may occur. These effects are acute and transitory, with an onset some hours after inhaling the fumes; the views of Lehmann (*Arch. Hyg. Berl.*, 1910, **72**, 358) on the pathology of the condition are still the accepted ones—namely, that the metal particles in the fume damage the epithelial cells of the lung alveoli, and that the ill effects are attributable to the absorption of proteins from these dead cells. It is clear from this that milk is not an antidote, and the general principles of treatment will be those of an acute infection. Prevention lies in ventilation which is adequate to remove and harmlessly dispose of fumes arising from welding and other operations which give rise to metal fume. Particular attention should be paid to ventilation when welding is performed in a confined space, as inside a boiler, tank, or compartment of a ship.

NOTES AND COMMENTS

Fissured Lip.—Dr. F. F. HELLIER (Leeds) writes: The answer given to the question about fissured lips (July 5, p. 41) did not mention treating the cause of the condition. The most likely cause is ill-fitting dentures which produce a fold of skin at the corner of the mouth. This has been called pseudo-ariboflavinosis because it somewhat resembles that caused by lack of riboflavine. The condition is cured by increasing the vertical dimension of the denture and filling it out a little so that the fold is eliminated. Obviously if there is a lack of vitamin B this should be corrected, but this is a very uncommon cause in this country.

Scabies Infection of Anus.—Dr. J. G. DAVIES (Edinburgh) writes: With reference to the answer under "Any Questions?" on the above subject (July 5, p. 41) I would like to make the following observations. In the Army in W. Africa and India scabies was regarded in the great majority of cases as being acquired by sexual intercourse. The distribution was different from that commonly observed in this country and the areas most frequently affected were the genitals and the buttocks. The fingers and wrists were comparatively rarely affected. I would suggest that the cases occurring in Natal may have been acquired venereally, and the mention of urine as a possible means of spreading the infection tends to support my belief that in those cases of peri-anal involvement the penis may have been the original source of infection. In V.D. clinics in Britain, too, scabies mainly affecting the genital organs following sexual exposure is frequently seen.

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